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Restatement of the I-O Coefficient Stability Problem

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Abstract The capacity of input-output tables to reflect the structural peculiarities of an economy and to forecast, on this basis, its evolution, depends essentially on the characteristics of the matrix A—matrix of I-O (or technical) coefficients. However, the temporal behaviour of these coefficients is yet an open question. In most applications, the stability of matrix A is usually admitted. This is a reasonable assumption only for a short-medium term. In the case of longer intervals, the question is much more complicated.

We shall empirically discuss this problem by using Romanian input-output tables. Our statistical option was motivated inter alia by the existence of official annual data for two decades (1989–2009).

As an introduction, Sect. 1 characterises the general framework of paper. Section 2—The main characteristics of I-O coefficients as statistical time series—examines the variability of technical coefficients expressed in both volume and value terms. The analysis is convergent to other previous works, confirming that the evolution of these coefficients in real and nominal terms is roughly similar. The main finding of this section is that, on one hand, the I-O coefficients are volatile, but on the other, they are serially correlated.

Consequently, Sect. 3—Attractor hypothesis—examines a possible presence of attractors in corresponding statistical series. The paper describes a methodology to approximate these using new indicators obtained by summation—in columns and rows—of the technical coefficients (colsums sca_j and rowsums sra_i). The RAS method is involved as a connecting technique between these indicators and sectoral data.

Section 4—Conclusions—presents the main conclusions of the research and outlines several possible future developments. The database and econometric analysis are presented in Statistical and Econometric Appendix.

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JEL Classification C12 · C32 · C43 · C67

1 Introduction

1. The capacity of input-output tables to reflect the structural peculiarities of the economy and to forecast, on this basis, its evolution, depends essentially on the characteristics of matrix A of I-O (or technical) coefficients. The so-called Leontief matrix $[(I - A)^{-1}]$ has proven to be a powerful analytical tool in the investigation of propagated effects induced by inter-industry production chains. Our paper utilises the methodological framework developed in [23, 24, 28, 41, 44].

The temporal behaviour of I-O coefficients is yet an open question. In most applications, the stability of matrix A is usually assumed. This comes from both classical and extended interpretations of the Cobb–Douglas production function. According to Sawyer (p. 327 in [38]), "Under the first of these alternative hypotheses, the a_{ij} will be stable in volume terms. Under the second, the a_{ij} will be stable in value terms". Generally, the relative stability of the technical coefficients can be considered as a reasonable assumption for a short-medium term. In the case of longer intervals, the question is much more complicated.

2. We shall empirically discuss this problem by using Romanian input-output tables. Our statistical option was motivated inter alia by the existence of official annual data for two decades (1989–2009).

These tables are built on an extended classification comprising 105 branches [17]. To simplify computational operations, the present research relates to a more compact version of 10 sectors [11, 33], as described in Table 1.

The correspondence of this collapsed structure to the original extended nomenclature is detailed in [12]. As in any aggregation, the one proposed in Table 1 implies some losses of information.

Nevertheless, the chosen analysis classification remains sufficiently complex and relevant to involve in this discussion some conceptual anchors of chaos theory. Specifically, we investigate whether the I-O coefficients series could contain sets of attractor points. To answer this question, a methodology for their numerical estimation will be applied to the available data.

3. The robustness of structural changes analysis and of the sectoral dynamic general equilibrium models depends mainly on the temporal behaviour of I-O coefficients. These can be estimated:

- in volume terms (at constant prices), denoted as ca_{ij}; and
- in value terms (at current prices), usually denoted as a_{ij}.

The first estimation concerns the real economy, while the second relates to the nominal one. These determinations are mediated by the relative prices (reP_{ij}).

If cx_{ij} represents the part of sector i's production (at constant prices p_{0i}) used in sector j, and cX_j—total output of the sector j (at constant prices p_{0j}), then:

$$ca_{ij} = cx_{ij}/cX_j \tag{1}$$

Table 1 Sectoral structure of the Romanian input-output tables

Code	Definition
1	Agriculture, forestry, hunting, and fishing
2	Mining and quarrying
3	Production and distribution of electric and thermal power
4	Food, beverages, and tobacco
5	Textiles, leather, pulp and paper, furniture
6	Machinery and equipment, transport means, other metal products
7	Other manufacturing industries
8	Constructions
9	Transports, post, and telecommunications
10	Trade, business, and public services

and

$$a_{ij} = x_{ij}/X_j \tag{2}$$

in which the same components of the above ratio are expressed in current prices (p_i and p_j, respectively).

Introducing the indices $P_i = p_i/p_{0i}$ and $P_j = p_j/p_{0j}$, we obtain

$$a_{ij} = x_{ij}/X_j = cx_{ij} * P_i/(cX_j * P_j) = (cx_{ij}/cX_j) * (P_i/P_j) = ca_{ij} * reP_{ij} \tag{3}$$

where $reP_{ij} = P_i/P_j$.

The I-O coefficients at constant prices were estimated using formula (3), which is equivalent to $ca_{ij} = a_{ij}/reP_{ij}$.

Econometric estimations involve several aggregative indicators resulted from the technical coefficients in value terms, namely:

- Colsums (sca_j), which summarises the I-O coefficients in columns,

$$sca_j = \sum_j a_{ij} \quad \text{with } j = \text{fixed}; i = 1, 2, \ldots, n \tag{4}$$

These approximate the weight of intermediary consumption in the total output of every sector.

- Rowsums (sra_i), which summarises the I-O coefficients in rows,

$$sra_i = \sum_i a_{ij} \quad \text{with } i = \text{fixed}; j = 1, 2, \ldots, n \tag{5}$$

These approximate the contribution of each sector to the intermediary consumption of the entire economy.

2 The Main Characteristics of I-O Coefficients as Statistical Time Series

In the evaluation of the temporal features of I-O coefficients, three questions are relevant:

- Do some peculiarities exist in the co-movement of I-O coefficients real-nominal expression?
- Are I-O coefficients really stable?
- Are these coefficients serially correlated?

The following sections attempt to find answers to these problems.

1. Relating to the first question, in principle the dynamics of real and nominal I-O coefficients are interdependent. On the supply side, the modifications in production costs (reflected by ca_{ij}) influence the current prices of transactions. On the other hand, the changes in relative prices (reflected by a_{ij}) have an impact on the demand structure and, consequently, on the size of the output and the conditions (technology, human capital, etc.) in which this is achieved. Due to the complexity of economic life, in each historical period this interdependence has some specific features. This is the reason why statistical evaluation becomes important. Given these, the estimation of the synchronisation degree (SDa) of changes in a_{ij} and ca_{ij} can be conclusive.

1.1. Starting from some proposals advanced in the literature about economic structures and cycles, three concrete formulae are considered.

(a) The first could be referred to as the cosine synchronisation degree (SDa1) since it is estimated as a vectorial angle between time series of I-O coefficients in their double expressions:

$$\mathrm{SDa1} = \sum_t (a_{ij,t} * ca_{ij,t}) \Big/ \left[\left(\sum_t a^2_{ij,t} \right)^{1/2} \left(\sum_t ca^2_{ij,t} \right)^{1/2} \right] \tag{6}$$

(b) The well-known correlation coefficient is often applied in statistical comparisons of real-nominal economic time series (see, for instance, [1, 8, 9, 16, 20, 26, 35, 39]). This Galtung–Pearson synchronisation degree (SDa2) is calculated as a ratio of covariance of series a_{ij} and ca_{ij} to the product of their standard deviations, respectively:

$$\begin{aligned} \mathrm{SDa2} = {} & \left(n * \sum_t a_{ij,t} * ca_{ij,t} - \sum_t a_{ij,t} * \sum tca_{ij,t} \right) \\ & \Big/ \left\{ \left[\left(n * \sum_t a^2_{ij,t} - \left(\sum_t a_{ij,t} \right)^2 \right)^{1/2} \right] \right. \\ & \left. * \left[\left(n * \sum_t ca^2_{ij,t} - \left(\sum_t ca_{ij,t} \right)^2 \right)^{1/2} \right] \right\} \end{aligned} \tag{7}$$

(c) A third method used in the economic literature for such analysis is worth mentioning [6, 9, 16]. We shall refer to it as the binary synchronisation degree (SDa3), which measures the proportion in which the compared series evolve in the same direction. Technically, a dummy variable is used, its value being 1 when the respective I-O coefficient increases, and 0 when it decreases or stagnates. If such an alternative assignment is denoted as da_{ij} for series a_{ij}, and, correspondingly, as dca_{ij} for series ca_{ij}, then SDa3 is given as

$$\mathrm{Sda3} = \left\{ \sum_t (da_{ijt} * dca_{ijt}) + (1 - da_{ijt}) * (1 - dca_{ijt}) \right\} \Big/ n \tag{8}$$

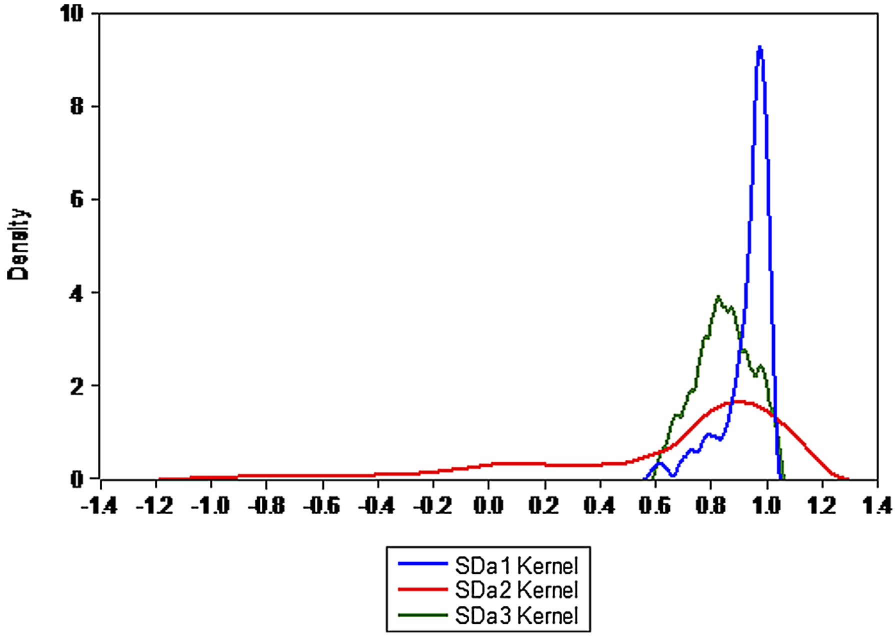


Fig. 1 Synchronisation degree (SDa) of changes in a_{ij} and ca_{ij}

n being the number of observations in the sample.

1.2. The above described SDa1, SDa2, and SDa3 do not raise special computational problems, and moreover, are easy to interpret. They have been applied in the series of all 100 technical coefficients, and the obtained results are synthesised in Fig. 1. Therefore, 95 % of SDa1 is positioned within 0.75–1 limits, and only 5 % do not exceed 0.75. At the same time, SDa2 is less than 0.5 in only one-fourth of cases; it is between 0.5–0.75 in 12 % of cases, and exceeds 0.75 in the rest (63 %). The last indicator is even more conclusive: SDa3 is within 0.75–1 in 87 % of cases, and less than 0.65 in none of the cases.

Summarising, all calculated synchronisation degrees of changes in a_{ij} and ca_{ij} indicate that the I-O coefficients in both their expressions—in volume and value terms—evolve in a similar manner.

1.3. A more nuanced understanding of this interdependence could be obtained by determining the global variability degree of changes in all I-O coefficients, avca for ca_{ij} and ava for a_{ij}:

$$\mathrm{avca}_t = \sum_j \left(\mathrm{wq}_{it} * \left(\sum_i (\mathrm{ca}_{ijt} - \mathrm{ca}_{ijt-1})^2 \right)^{1/2} \right) \tag{9}$$

$$\mathrm{ava}_t = \sum_j \left(\mathrm{wq}_{it} * \left(\sum_i (\mathrm{a}_{ijt} - \mathrm{a}_{ijt-1})^2 \right)^{1/2} \right) \tag{10}$$

where wq_i represents the weight of sector i in the total output of economy.

Table 2 Unit root tests for ava and avca

	Exogenous					
	None		Constant		Constant, linear trend	
	Null hypothesis: ava has a unit root	Null hypothesis: avca has a unit root	Null hypothesis: ava has a unit root	Null hypothesis: avca has a unit root	Null hypothesis: ava has a unit root	Null hypothesis: avca has a unit root
Augmented Dickey–Fuller						
t-statistic	−0.893149	−1.306076	−2.758188	−2.402669	−3.582018	−2.83151
Prob.	0.3163	0.1702	0.0831	0.1541	0.0589	0.205
Phillips–Perron						
Adj. t-statistic	−0.713021	−1.355274	−2.661355	−2.441546	−3.582018	−2.676491
Prob.	0.3943	0.1567	0.0989	0.1445	0.0589	0.2553

There were applied two unit root tests for ava and avca: ADF—Augmented Dickey–Fuller and PP—Phillips–Perron. All available options concerning the exogenous (no one, constant, constant plus linear trend) have been computed. The results are detailed in Table 2. Indulgently accepting the stationarity assumption, the pairwise Granger test statistically accredits a certain interconnection between the respective series only on a short run, with the causality direction from avca toward ava (probability of null hypothesis = 0.0881) for one lag, and converse, from ava toward avca (probability of null hypothesis = 0.0943) for two lags. More appropriate for non-stationary series, the test Toda–Yamamoto [43] indicates again on a short run (two lags) an influence of ava on avca (according to F-statistic, and Chi-square, the probability for null hypothesis "ava does not cause avca" represents 0.1107 and, respectively, 0.0869).

Except for 4 years (1991, 2002–2003, and 2005), the ratio of ava to avca was <1 in all periods. This means that the changes in relative prices somehow attenuated the shifts in technical coefficients in volume terms.

2. The examination of the co-movement pattern of changes in the real and nominal expressions of I-O coefficients does not clarify if these are relatively stable (small annual changes) or significantly volatile. This is important for our analysis.

In the case of I-O coefficients, we shall adopt a larger interpretation of volatility as an integrating measure of the frequency and size of the changes registered in their evolution. A comprehensive analysis of volatility determinants exceeds the thematic perimeter of this paper. Briefly, we recall the following factors:

- the performance of preponderantly used technologies that redound to most aspects of costs (labour productivity, energy and raw material intensities, quality of goods and services, length of productive cycles, etc.);
- the dimension, and structure of domestic demand, which influence the scale efficiency and relative prices;
- the openness degree of the country, with its impact on firms' access to external markets, on import substitution effects, and on productive factors migration;
- the institutional reforms that have a great role in both emerging and developed economies; and

- the operational consequences of macroeconomic policies that can facilitate or, on the contrary, hinder the fructification of comparative advantages for the respective economy.

Quantitatively, the volatility of a given indicator will be approximated by its variation coefficient calculated (for the entire available time series) as follows. If q_t is the value of this indicator at moment t ($t = 1, 2, \ldots, s$) and ω_q its level admitted as referential, then this coefficient (C_V) is determined by

$$C_V = \left[\left(\sum_t (q_t/\omega_q - 1)^2\right)/s\right]^{1/2} \tag{11}$$

In principle, ω_q can differ depending on the objectives of analysis. As a first choice, we adopt the sample mean, accommodating expression (11) to the standard deviation formula largely used in modern statistics. Such an approach is suitable in forecasting the volatility for different interested horizons by simple extrapolation of its statistically registered level.

The proposed procedure consists of the following steps:

- For each interval two estimations of the respective indicator are determined: an upper and a lower level. The first is obtained by multiplying the mean of the previous series by $(1 + C_V)$, while the other results similarly but using $(1 - C_V)$ as a multiplier. We shall designate these values as Y for the upper level and y for the lower one.
- On this basis, two new means are also computed, mixing the corresponding previous series with Y and y: they will be represented by the symbols M, and m, respectively. The statistical volatility is applied again by multiplying the new M by $(1 + C_V)$ and m by $(1 - C_V)$. This procedure is continued as much as it is considered useful (the forecast period being denoted by $\tau = 1, 2, \ldots, n$).
- The difference $(Y - y)$ can be admitted as an error (ef_V) attributable to the initially estimated volatility. The interpretation of results would be facilitated by equalising the starting sample mean to unity.

More formally, for the upper level, we have

$$Y_{\tau-1} = (1 + C_V) * M_{\tau-2}, \quad \tau = 1, 2, \ldots, n \tag{12}$$

$$\begin{aligned} M_{\tau-1} &= \big((s + \tau - 2) * M_{\tau-2} + Y_{\tau-1}\big)/(s + \tau - 1) \\ &= \big((s + \tau - 2) * M_{\tau-2} + (1 + C_V) * M_{\tau-2}\big)/(s + \tau - 1) \\ &= M_{\tau-2} * (s + \tau - 2 + 1 + C_V)/(s + \tau - 1) \\ &= M_{\tau-2} * (s + \tau - 1 + C_V)/(s + \tau - 1) \\ &= M_{\tau-2} * \big(1 + C_V/(s + \tau - 1)\big) \end{aligned} \tag{13}$$

$$Y_\tau = (1 + C_V) * M_{\tau-1} = (1 + C_V) * M_{\tau-2} * \big(1 + C_V/(s + \tau - 1)\big) \tag{14}$$

A simplification can be obtained by passing to indices ($IY_\tau = Y_\tau/Y_{\tau-1}$):

$$\begin{aligned} IY_\tau &= \big\{(1 + C_V) * M_{\tau-2} * \big(1 + C_V/(s + \tau - 1)\big)\big\}/\big[(1 + C_V) * M_{\tau-2}\big] \\ &= \big(1 + C_V/(s + \tau - 1)\big) \end{aligned} \tag{15}$$

This relationship is valid for $\tau \geq 2$ since $Y_0 = M_0 = 1$ and $Y_1 = (1 + C_V) * M_0 = (1 + C_V)$. Finally, we have

$$Y_n = (1 + C_V) * \prod_{\tau} \bigl(1 + C_V/(s + \tau - 1)\bigr) \quad \text{for } \tau = 2, \dots, n \tag{16}$$

Symmetrically, the expression of y_n is determined as

$$y_n = (1 - C_V) * \prod_{\tau} \bigl(1 - C_V/(s + \tau - 1)\bigr), \quad \text{again for } \tau = 2, \dots, n \tag{16a}$$

and

$$\begin{aligned} ef_{Vn} = {} & \Bigl[(1 + C_V) * \prod_{\tau} \bigl(1 + C_V/(s + \tau - 1)\bigr)\Bigr] \\ & - \Bigl[(1 - C_V) * \prod_{\tau} \bigl(1 - C_V/(s + \tau - 1)\bigr)\Bigr] \end{aligned} \tag{17}$$

Therefore, ef_{Vn} is influenced mainly by C_V, s, and τ. Figures 2(a) and 2(b) illustrate some indifference curves of the initial C_V depending on s and m, estimated under the conditions given in Table 3.

The presented algorithm can be used in establishing a kind of taxonomy scale of I-O coefficients volatility. Toward this aim, it would be necessary to determine the desirable levels of ef_V and the length of τ (that is, the value of n). A possible starting point in this sense can be the expectable financial risk induced by economic decisions linked to forecasted I-O coefficients. Addressing this question requires further research. A possible solution to this problem could be adequately extrapolated in other socio-economic fields.

Returning to the Romanian I-O tables, the variation coefficient, based on formula (11), was computed for all statistical series in 1989–2009 (100 ca_{ij} and 100 corresponding a_{ij}). The results are summarised in Table 4, which shows that there is no I-O coefficient with $C_V < 0.05$ and only one with $C_V < 0.1$; instead, 85 % of ca_{ij} and 73 % of a_{ij} are characterised by $C_V > 0.3$. The hypothesis that the mean of all C_V would be between 0.4–0.65 was tested for both series $C_V ca_{ij}$ and $C_V a_{ij}$. The results are presented in Fig. 3.

In many cases, the volatility is so high that the calculated ef_V becomes abnormal even for very short intervals. As an example, the evolution of the error attributable to the initially estimated volatility (ef_V) was determined for three cases: for $C_V = 0.1$ (variant 1), $C_V = 0.2$ (variant 2), and $C_V = 0.3$ (variant 3), during $\tau = 1, 2, \dots, 15$. The results of this exercise are denoted as ef_V1, ef_V2, and ef_V3, and are summarised in Fig. 4. We recall that the computed data represent indices comparatively to the mean level of the statistical series (the mean equalised to 1). For $C_V = 0.3$, the difference between the forecasted limits of the respective indicator can reach 0.7 in five years and 0.8 in ten. Even for $C_V = 0.1$, the potential forecasting error is hardly ac-

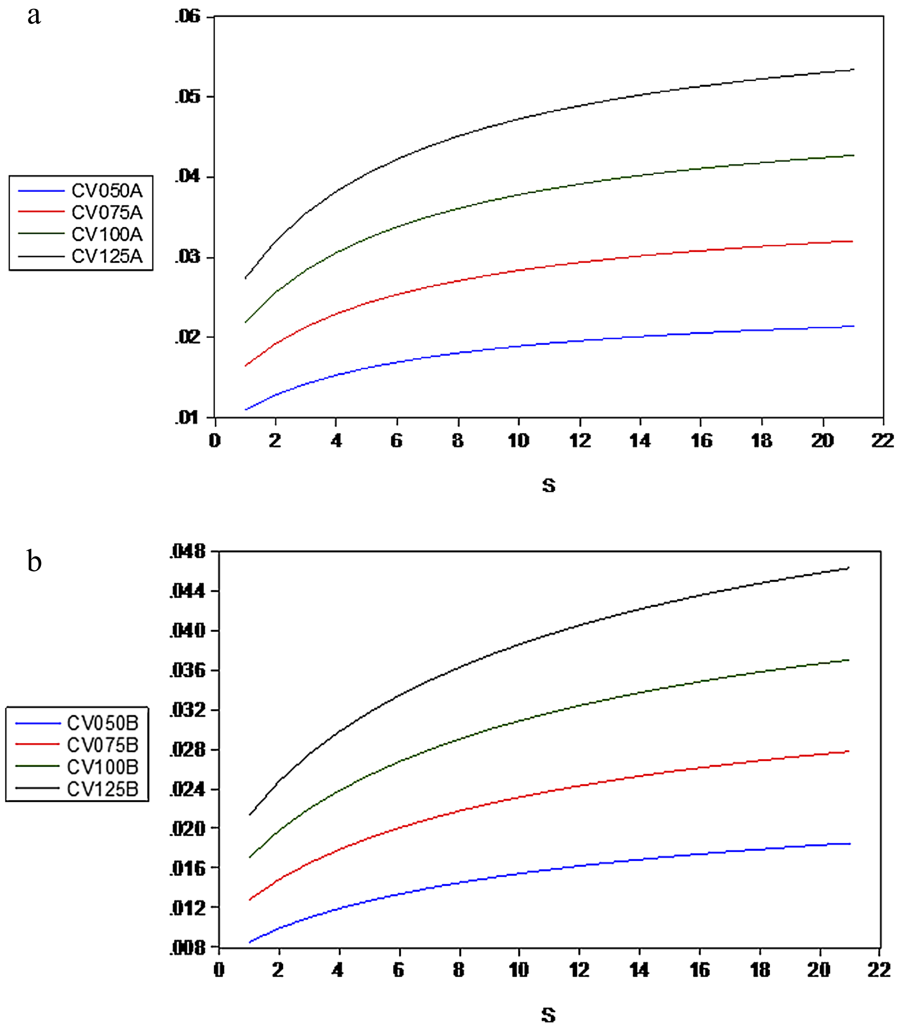


Fig. 2 (**a**) Estimation of the initial C_V depending on s and the final desirable ef_V (Variant A). (**b**) Estimation of the initial C_V depending on s and the final desirable ef_V (Variant B)

ceptable. As we have already shown, the levels calculated for Romanian I-O tables are overall much higher than the simulated (in Fig. 4) values of C_V.

3. Like other previous studies, the analysis of Romanian I-O tables confirms that the technical coefficients are volatile. What needs to be documented is the nature of this volatility, and the highly questionable factor is the presence of non-linearities in the respective statistical series. Such a possibility has been revealed in many economic indicators [3, 34]. In the case of Romanian I-O tables, we shall also examine whether the data regarding the technical coefficients are independent or, on the contrary, serially correlated.

Table 3 Estimation of the initial C_V depending on s and the final desirable ef_V

Variant	Forecasted interval	Final desirable ef_V
C_V050A	5	0.05
C_V075A	5	0.075
C_V100A	5	0.1
C_V125A	5	0.125
C_V050B	10	0.05
C_V075B	10	0.075
C_V100B	10	0.1
C_V125B	10	0.125

Table 4 Tabulation of statistical variation coefficients (C_V)

Limits of var. coeff.	$C_V ca_{ij}$	$C_V a_{ij}$
0.05–0.1	1	1
0.1–0.2	5	11
0.2–0.3	9	15
0.3–0.4	15	11
0.4–0.5	16	23
0.5–0.6	16	12
0.6–0.7	10	5
0.7–0.8	9	10
0.8–0.9	8	6
0.9–1	4	3
>1	7	3
Total	100	100

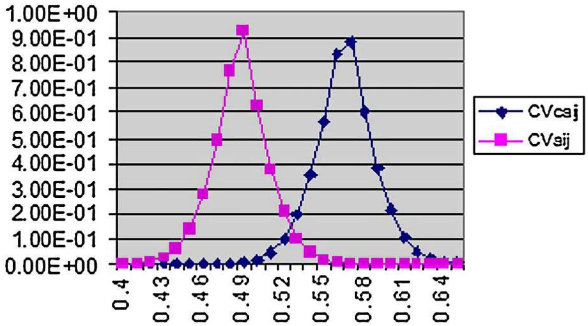


Fig. 3 Probability for the mean of $C_V ca_{ij}$ and $C_V a_{ij}$ to be situated between 0.4–0.65 (tabulated on abscissa)

It is widely accepted that: "The correlation sum in various embeddings can... be used as a measure of determinism in a time series" (p. 313 in [40]). The BDS test is sensitive to a large variety of possible deviations from independence in time series, including linear dependence, non-linear dependence, or chaos. Concerning this technique, our turns to the conceptual and applicative framework developed in [2, 6,

Fig. 4 Simulated ef_V for three variants of C_V

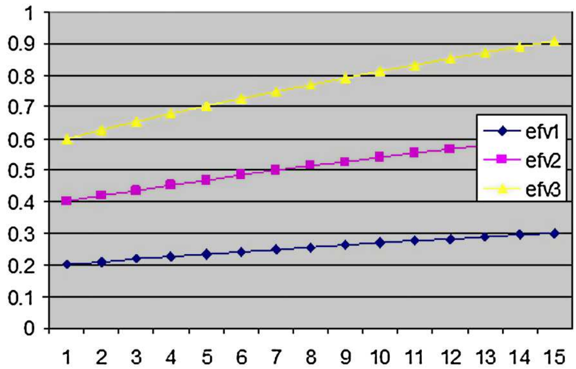
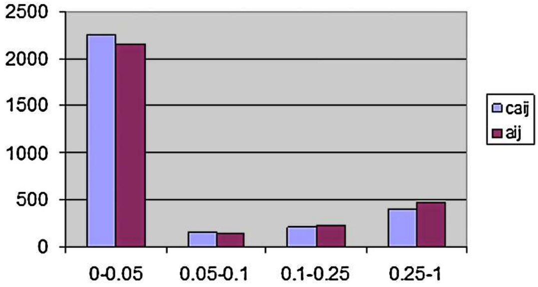


Fig. 5 Distribution of BDS tests (whole sample) in terms of p-value



32]. Thus, the null hypothesis of independent and identically distributed (i.i.d.) data is checked against an unspecified alternative.

For the I-O tables examined in this paper, the BDS test was applied to both categories of coefficients—at constant (ca_{ij}) and current prices (a_{ij}). Concerning the embedding dimension, we sought to cover an extended range of possibilities. Due to the insufficient length of the statistical series, five such variants were adopted: 2, 3, 4, 5, and 6. As a principal guiding mark, the p-value for the tested null hypothesis was retained, computed for the sample data (normal probability) and for their random repetitions (bootstrap probability). Recent software provided both probabilities (normal and bootstrap) for three options related to the distance used for testing: the fraction of pairs, the standard deviations, and the fraction of range. Therefore, 30 p-values were computed for each technical coefficient, resulting in five dimensions, two tested series (original and bootstrap), and three distances.

The characterisation of the global distributions of the obtained p-values for all series of technical coefficients will be discussed. Two classifications are significant.

First, the p-values for all 3000 estimations are classified according to the following thresholds: under 0.05, 0.05–0.1, 0.1–0.25, and 0.25–1, presented in Fig. 5. This shows that in the case of ca_{ij}, over 75 % of p-values (2252) are below 0.05; if the group 0.05–0.1 is added, the proportion reaches 80 %. The picture is similar for a_{ij}: almost 72 % of tests are estimated with p-values of under 0.05, and approximately 76 % have p-values of less than 0.1. This means that, generally, the series of I-O coefficients (either at constant or current prices) are not independent.

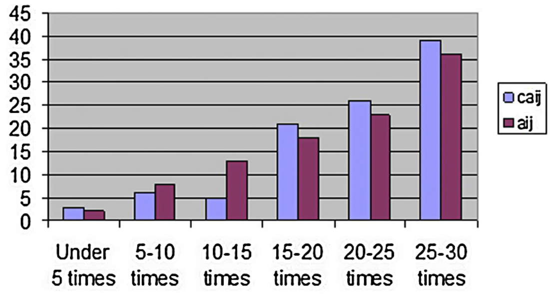


Fig. 6 Classification of the technical coefficients depending on registered p-values under 0.05

The second application sorts I-O coefficients depending on the number of registered BDS p-values under 0.05. Toward this aim, six classes are delimited: up to 5 times, 5–10, 10–15, 15–20, 20–25, and 25–30. Evidently, the sum of classes is equal to 100 (the totality of coefficients). Figure 6 synthesises this distribution, showing that in each of the 86 ca_{ij}, at least 15 tests had p-values of under 0.05. The result is no different in the case of a_{ij} coefficients: among 90 cases, at least 10 p-values were under 0.05. The similarity of the ca_{ij} and a_{ij} series suggests that the volatility of relative prices does not substantially influence the presence of serial correlation in the data.

Thus, in this section, we can conclude that, on one hand, the I-O coefficients are volatile, but on the other, they are serially correlated. Both statements have statistical support. More simply stated, we acknowledge a paradox because the high volatility indicates rather the presence of a quasi-disorder, while the serial correlation indicates a possible stable pattern in the analysed time series. The following section focuses on this exciting matter.

3 Attractor Hypothesis

The revealed contradictory combination of relatively high volatility of data and their consistent serial correlation generates a legitimate question: Is this contradiction a sign of a possible presence of an attractor in statistical series?

1. Generally, an attractor is considered a point or a closed subset of points (lines, surfaces, volumes), toward which a given system tends to evolve independently of its initial (starting) state [29–31, 36, 37]. Three types are frequently mentioned:

- stable steady states,
- different types of cycles, and
- strange attractors.

The first type is relatively usual in Economics ("At best, the notion of equilibrium might, in practice, be identified with the notion of <attractor>"; p. 34 in [14]). The list of such examples is long, from the optimal rates of accumulation to the extended palette of Phillips curves.

Such points or lines need to be regarded rather as historical (that is, contextually determined) phenomena than as permanent, inflexible benchmarks. It is worth mentioning that some authors considered the "natural rate of unemployment" as a rather weak attractor (p. xiii in [4]).

Taking into account the numerous such applications in economics, the following systematisation of types of stable steady states would be useful:

- stable points,
- constant rates of movement (in different expressions, such as indices, elasticities, ratios, spreads, etc.), and
- bands of evolution.

All these are interesting perspectives in researching I-O tables. However, such a target would require many and sustained efforts. Our target is very narrow, namely, to attempt to identify in the studied statistical series some fixed points as possible attractors. This hypothesis will be used in two sub-variants: fixed points as such or slightly variable points with gradually decreasing influence of unknown factors (cumulated over a time parameter). Besides, the econometric analysis will concentrate on the dynamics of each I-O coefficient, considered separately and not in connection with other series.

Therefore, the evolution of I-O coefficients is conceived as an auto-regressive adaptive process, the differences between their actual and long-run levels being influenced by the past deviations. In the simplest form, such an application for Romanian input-output tables was developed in [10]. In a general notation, if y is the time series of interest, we would have the following relationship:

$$\mathrm{y_t} = \tilde{\mathrm{y}} - \alpha * \bigl(\mathrm{y}(-1) - \tilde{\mathrm{y}}\bigr) = \tilde{\mathrm{y}} * (1+\alpha) - \alpha * \mathrm{y}(-1) \tag{18}$$

where $\tilde{\mathrm{y}}$ represents the long-run levels of y (or the attractor according to this paper's terminology). It is assumed that $0 < |\alpha| < 1$, which means that y tends asymptotically towards $\tilde{\mathrm{y}}$. Correspondingly, the first-order difference operator d(y) is defined as

$$\begin{aligned} \mathrm{d(y)} &= \mathrm{y} - \mathrm{y}(-1) = \tilde{\mathrm{y}} * (1+\alpha) - \alpha * \mathrm{y}(-1) - \mathrm{y}(-1) \\ &= \tilde{\mathrm{y}} * (1+\alpha) - (1+\alpha) * \mathrm{y}(-1) = \mathrm{a_0} - \mathrm{a_1} * \mathrm{y}(-1) \end{aligned} \tag{19}$$

The expression (19) contains the equivalencies $\mathrm{a_0} = \tilde{\mathrm{y}} * (1+\alpha)$ and $\mathrm{a_1} = (1+\alpha)$.

To be more realistic, this determination will be relaxed by two amendments. On one hand, the last formula will be extended, with gradually diminishing influence of time. On the other, the auto-regressive process may involve lags of higher orders, not only of the first one, as in (19).

2. Even under such modifications, the approximation of possible attractor points requires the presence of at least one non-differentiated observation in the computational formula. Therefore, it would be preferable to use the statistical series stationary in levels (I(0)). Unfortunately, most of the available data do not observe such a restriction. From this point of view, two already mentioned unit root tests were applied: ADF—Augmented Dickey–Fuller and PP—Phillips–Perron test. Each was computed in three versions for the exogenous variables:

- none (denoted as 1),
- individual effects (denoted as 2), and
- individual effects and individual linear trends (denoted 3).

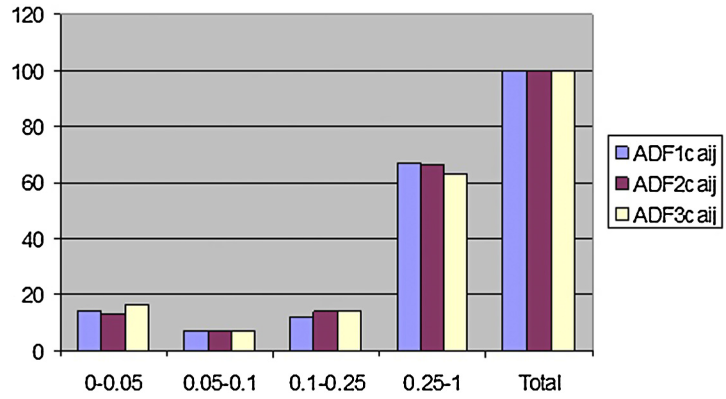


Fig. 7 ADF tests for ca_{ij}

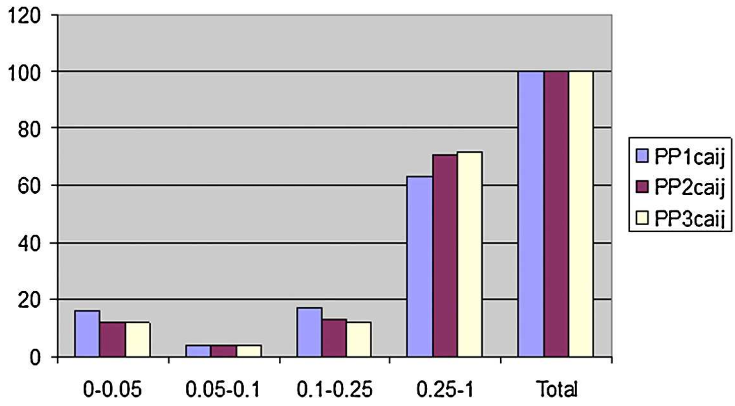


Fig. 8 PP tests for ca_{ij}

The p-values calculated for all 100 technical coefficients were grouped as follows: 0–0.05, 0.05–0.1, 0.01–0.25, and 0.25–1.

The corresponding distribution for the technical coefficients at constant prices (ca_{ij}) is presented in Figs. 7 and 8. Both unit root tests (ADF and PP) show that in around 80 % of the cases, the p-values exceed 0.1. The same result is found for the technical coefficients at current prices (see Figs. 9 and 10).

At this point, we are confronted with a problem. The BDS test indicated the presence of temporal correlation in the data for technical coefficients (either at constant or at current prices). As previously mentioned, this finding would justify the identification of possible attractor points in their evolution. Since the series are not stationary in levels, in order to avoid the calculation of attractor points (as levels) by first- or second-order differentiation (a difficult computational task), an indirect way to approximate such points will be proposed.

The first step is to determine colsums (sca_j) and rowsums (sra_i) for the technical coefficients at current prices. The resulting series are given in Statistical and Econo-

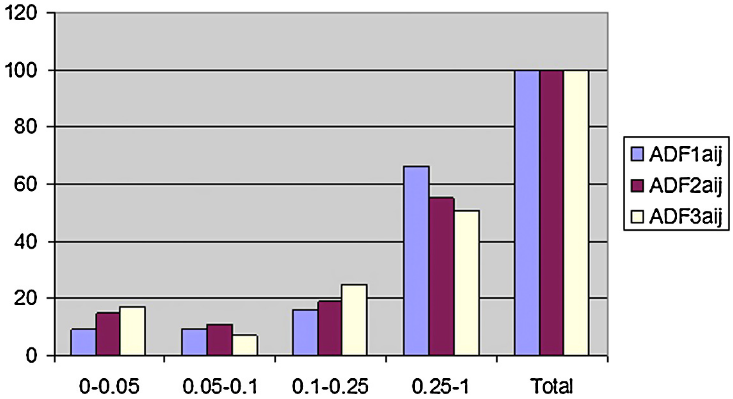


Fig. 9 ADF tests for a_{ij}

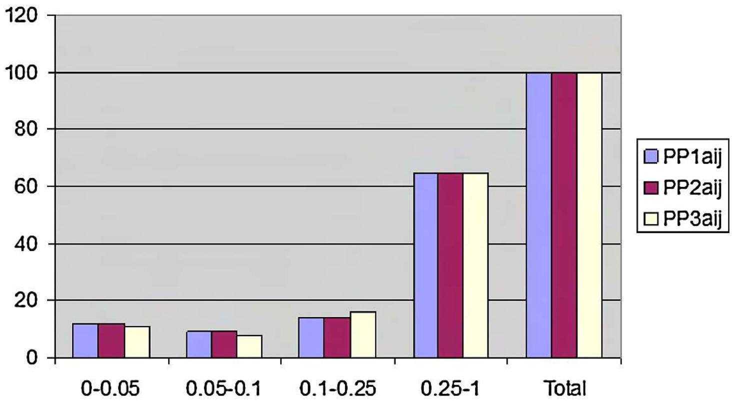


Fig. 10 PP tests for a_{ij}

metric Appendix. With respect to these time series, PANEL analysis did not reveal compelling signs of common explicative parameters. For this reason, they were examined separately. Table 5 shows the p-values of the ADF and PP tests for the sca_i series. In only three cases (sca_2, sca_3, and sca_4) are the corresponding p-values situated in the proximity of 0.25. Consequently, the series sca_i will be used as such in regressions.

Table 6 presents the same indicators for sra_i. The introduction of econometric estimations for series sra_5, sra_8, and sra_{10} as such would clearly be too risky. Consequently, the first two were recalculated by the Hodrick–Prescott filter, obtaining for each the sub-series denoted as HP and HPd (difference between filter and primary data), respectively. The third series (sra_{10}) was replaced with the corresponding logarithms. Table 7 shows the unit root test results, based on which the new series for sra_5, sra_8, and sra_{10} were used in regressions.

The formula (19) with the mentioned amendments was investigated using different specifications. The proposed selection considered, beside the mentioned premises,

Table 5 ADF and PP tests for sca_i

Variable	Exogenous	ADF		PP	
		t-statistic	Prob.	t-statistic	Prob.
sca_1	Constant, linear trend	−4.54901	0.009	−4.52912	0.0094
sca_2	Constant	−2.02573	0.274	−2.00889	0.2809
sca_3	Constant	−3.98533	0.0073	−2.00269	0.2833
sca_4	Constant, linear trend	−4.79669	0.0072	−2.85646	0.1956
sca_5	Constant, linear trend	−6.12916	0.0005	−3.86767	0.0339
sca_6	Constant, linear trend	−5.45292	0.0026	−3.4261	0.0761
sca_7	Constant	−4.76606	0.0018	−2.99545	0.0525
sca_8	Constant	−5.00001	0.0008	−7.99152	0
sca_9	Constant	−4.47988	0.0028	−2.81411	0.0741
sca_{10}	Constant, linear trend	−4.43914	0.012	−7.71446	0

Table 6 ADF and PP tests for sra_i

Variable	Exogenous	ADF		PP	
		t-statistic	Prob.	t-statistic	Prob.
sra_1	Constant, linear trend	−3.06826	0.1399	−1.59124	0.1031
sra_2	Constant	−2.94275	0.0581	−2.91376	0.0614
sra_3	Constant	−3.51945	0.0183	−3.51945	0.0183
sra_4	Constant	−2.6057	0.1083	−2.6057	0.1083
sra_5	Constant, linear trend	−2.28894	0.4194	−2.54869	0.3041
sra_6	None	−2.36343	0.0209	−2.17192	0.0319
sra_7	Constant, linear trend	−4.96559	0.0044	−2.84798	0.1981
sra_8	Constant, linear trend	−2.34672	0.3929	−1.90162	0.6163
sra_9	Constant	−2.91805	0.0609	−2.91805	0.0609
sra_{10}	Constant	−1.22677	0.6415	−1.28041	0.6175

the results of tests for omitted or redundant variables, and outliers, also. It has also tried to reduce the econometric compromises as much as possible. For the current paper, several types of relationships were retained according to the scheme given in Table 8. Sometimes dummy variables were introduced to decrease the influence of data outliers.

3. The OLS-solution of system SyS1scr (Statistical and Econometric Appendix) was submitted to econometric controls from four standpoints: (a) variance inflation factors, (b) Breusch–Pagan–Godfrey heteroskedasticity test, (c) correlogram squared residuals, and (d) stationarity of residuals.

Concerning the variance inflation factors (Table 9), it is conclusive that more than 77 % of the centred VIFs do not exceed 2, and approximately 15 % are situated between 2 and 3; even the rest do not surpass 5.3. Based on these results, we could accept that the specification of the system SyS1scr is not contaminated in an alarming manner by collinearity effects.

Table 7 ADF and PP tests for derived series sra_5, sra_8, and sra_{10}

Variable	Exogenous	ADF		PP	
		t-statistic	Prob.	t-statistic	Prob.
sra_5HP	None	−2.48196	0.0168	−1.41255	0.1422
sra_5HPd	None	−5.36025	0	−3.91121	0.0005
sra_8HP	Constant	−3.84112	0.0116	−2.06376	0.5334
sra_8HPd	None	−3.73356	0.0008	−3.89625	0.0005
$sra_{10}l$	None	−4.16256	0.0003	−5.48654	0

The test Breusch–Pagan–Godfrey (Table 10) indicates high enough probabilities for the rejection of heteroskedasticity hypothesis.

The correlogram of squared residuals was computed for five lags (Table 11). In most cases, Q-statistics are associated with relatively large p-values, which attest a weak serial correlation in the residuals.

Concerning the stationarity of residuals, both unit root tests ADF and PP were applied again, in all available options for exogenous (Table 12). There were thus generated 132 values of the probability the respective residual has a unit root. Out of these, 76.52 % are placed under 0.05, and 10.61 % between 0.05–0.1.

The above presented tests (for collinearity, heteroskedasticity, serial correlation, and stationarity of residuals) show that OLS could be acceptable to estimate the system SyS1scr.

4. The system SyS1scr has been solved using other four techniques: Weighted Least Squares (WLS), Seemingly Unrelated Regression (SUR), Generalised linear models (GLM), and Generalised Method of Moments (GMM). The obtained results are detailed in Statistical and Econometric Appendix.

The solution induced by Weighted Least Squares slightly ameliorates the standard errors, maintaining, however, the parameters of equations practically at the same level as OLS. The differences between Seemingly Unrelated Regression and OLS re-

Table 8 Main econometric relationships

Variables (y)	Specification
sca_1, sra_2, sra_4, sra_9, $\log(sra_{10})$	$d(y) = a_0 + a_1 * y(-1)$, with possible $a_1 * y(-3)$ or $a_2 * d(y, 2)$
sca_8, sca_{10}	$d(y) = b_0 + b_1 * y(-1) + b_2 * t/(t+1)$, with possible $b_0 = 0$
sca_2, sra_3, sra_5HPd	$d(y) = c_0 + c_1 * y(-1) + c_2 * d(y(-1))$, with possible $c_0 = 0$ or $c_1 * y(-2)$
sca_5, sca_6, sca_9	$d(y) = d_0 + d_1 * y(-1) + d_2 * d(y(-1)) + d_3 * d(y(-2)) + d_4 * t/(t+1)$, with possible $d_3 = 0$
sra_8HP, sra_8HPd	$d(y) = e_0 + e_1 * y(-1) + e_2 * d(y, 2)$, with possible $e_0 = e_1 = 0$
sca_7, sra_5HP	$d(y) = f_0 + f_1 * y(-1) + f_2 * d(y(-1)) + f_3 * d(y(-2)) + f_4 * d(y(-3)) + f_5 * t/(t+1)$ with possible $f_3 = f_4 = f_5 = 0$
sra_1, sra_6	$d(y) = g_0 + g_1 * y(-1) + g_2 * d(y(-1)) + g_3 * t^{-1}$, with possible $g_2 * d(y(-2))$
sca_3	$d(y) = h_0 + h_1 * y(-3) + h_2 * t^{-1}$
sca_4, sra_7	$d(y) = i_0 + i_1 y(-2) + i_2 * d(y, 2) + i_3 * t/(t+1)$ or $i_3 * t^{-1}$

Table 9 Variance Inflation Factors—SyS1scr

Variable	Coefficient variance	Uncentred VIF	Centred VIF	Variable	Coefficient variance	Uncentred VIF	Centred VIF
c(1)	0.007439	181.7134	NA	c(39)	0.024642	1.450884	1.315947
c(2)	0.032656	182.2648	1.009286	c(40)	0.109405	22.57514	5.223014
c(501)	0.00087	1.062407	1.009286	c(510)	0.001322	1.149574	1.085709
c(3)	0.003984	74.7162	NA	c(41)	0.010673	94.24219	NA
c(4)	0.00863	74.77052	1.17408	c(42)	0.035631	93.71807	2.198215
c(5)	0.014339	1.296515	1.292649	c(43)	0.014986	2.1191	2.11897
c(6)	0.001936	128.8835	NA	c(511)	0.002527	1.174249	1.112446
c(7)	0.003913	153.3235	1.466782	c(44)	0.020214	88.31065	NA
c(8)	0.007181	6.302923	1.458253	c(45)	0.043413	87.61261	1.624957
c(9)	0.025715	4402.565	NA	c(46)	0.044123	1.654492	1.645571
c(10)	0.014377	1123.768	4.799226	c(512)	0.004665	1.072668	1.016212
c(11)	0.003776	1.17145	1.169737	c(47)	0.003327	95.02657	NA
c(12)	0.008835	1235.916	4.601097	c(48)	0.021225	94.48058	1.093589
c(505)	0.000188	1.696676	1.607377	c(513)	0.00079	1.128173	1.071764
c(13)	0.019685	1392.005	NA	c(514)	0.000754	1.077272	1.023409
c(14)	0.024542	623.8674	1.638509	c(49)	2.81E-06	426.7166	NA
c(15)	0.016727	1.35002	1.347123	c(50)	1.05E-05	395.778	2.751647
c(16)	0.00631	364.5846	1.357284	c(51)	0.000234	3.754934	2.751647
c(17)	0.034858	1965.638	NA	c(52)	0.025272	1.796378	
c(18)	0.030144	650.8176	2.390064	c(53)	0.016926	1.920122	
c(19)	0.023574	1.422988	1.404814	c(515)	0.000178	1.170656	
c(20)	0.011187	515.4273	1.918844	c(516)	0.000184	1.211256	
c(21)	0.081562	8973.245	NA	c(54)	0.003218	19.90196	NA
c(22)	0.092117	5429.118	3.120946	c(55)	0.007158	20.39908	1.264573
c(23)	0.042363	2.079116	2.060516	c(56)	0.017469	1.220558	1.218342
c(24)	0.031891	1.948496	1.866357	c(517)	0.003526	1.147892	1.087476
c(25)	0.033425	2.002502	1.928123	c(57)	0.014686	248.5112	NA
c(26)	0.012829	1189.042	1.690041	c(58)	0.00772	281.5666	1.506779
c(27)	0.002979	389.7016	NA	c(59)	0.003002	1.016724	1.00456
c(28)	0.009449	388.3649	1.064145	c(60)	0.015966	4.954369	1.509934
c(29)	0.005972	1.198711	1.182468	c(61)	6.02E-06	47.60604	NA
c(506)	0.000171	1.178583	1.116553	c(62)	1.66E-04	23.38802	1.507298
c(30)	0.005762	1013.246	NA	c(63)	1.57E+00	11.50596	1.668578
c(31)	0.027859	860.7738	1.847807	c(518)	2.77E-06	1.152835	1.092159
c(32)	0.019306	2.0286	2.028597	c(519)	2.94E-06	1.223618	1.159217
c(33)	0.003382	494.3642	1.101297	c(64)	0.006251	1.235811	
c(507)	0.000142	1.385103	1.308153	c(520)	0.000222	1.133899	
c(34)	0.003091	324.9721	NA	c(521)	0.000216	1.101912	
c(35)	0.00348	292.1113	2.021579	c(65)	0.003105	18.95904	NA

Table 9 (*Continued*)

Variable	Coefficient variance	Uncentred VIF	Centred VIF	Variable	Coefficient variance	Uncentred VIF	Centred VIF
c(36)	0.005765	95.10627	1.474381	c(66)	0.017978	19.27486	1.020607
c(508)	0.000506	2.661904	2.528809	c(522)	0.003492	1.066213	1.012902
c(509)	0.000219	1.151599	1.094019	c(523)	0.003497	1.067792	1.014402
c(37)	0.011343	177.5241	NA	c(67)	0.000826	3.416318	NA
c(38)	0.042122	285.9858	4.932777	c(68)	0.000602	3.868874	1.182485
				c(524)	0.00545	1.252043	1.182485

garding estimators and coefficients of determination are also insignificant. The same conclusion is valid for the Generalised Linear Models (applied with bootstrap).

The Generalised Method of Moments was involved in variant HAC for the time series (Bartlett and Variable Newey–West). Despite the large number enough of trials, the results were inconclusive. First, in order to obtain a plausible solution, it was necessary to break SyS1scr into three sub-systems—SyS1scaG, SyS1sraG, and SyS1sra8G—which have been separately computed. Secondly, the algorithm did not work with dummies, or these were not introduced casually, but according to the specification test about outliers.

Briefly, the comparative analysis of different techniques suggests as acceptable OLS method. Nevertheless, a problem persists. According to Statistical and Econometric Appendix (System Residual Cross-Correlations—OLS), the disturbances of some relationships represented in SyS1scr are correlated. They reflect, at great extent, the indubitable fact of inter-industry linkages. Obviously, there must be a consistent solution of the question hereby discussed. It could result from a re-specification of the entire system by explicit inclusion in the equations of the factors inducing cross-correlations among input-output technical coefficients, and subsequently applying computational methods that avoid simultaneity effects. But such an approach should need further interdisciplinary research. Until then, I am reluctant to involve techniques which somehow mechanically constrict the cross-correlations of I-O coefficients. Consequently, for the present OLS will keep being involved in the succeeding steps of our approach.

5. Based on the previous system, the fitted $\mathrm{sca_j f}$ and $\mathrm{sra_i f}$ can be obtained, but not $\mathrm{a_{ij} f}$ as such. To approximate these, the RAS technique was applied. During its half-century existence [42], this method has registered extended applications, including in recent researches [7, 18, 19, 21, 22, 25, 27]. Usually, the starting matrix for every t is the statistical matrix $\mathrm{A_{t-1}}$, which is adjusted by successive bi-proportional corrections in dependence on exogenously given sectoral outputs. The applicability of such a method for an emergent economy such as in Romania has already been documented [13].

The present paper slightly modifies this procedure, using $\mathrm{sca_j f}$ and $\mathrm{sra_i f}$ as column and row restrictions in a RAS algorithm. The resulting technical coefficients (denoted as $\mathrm{ra_{ij}}$) are relevant from the present research perspective. Notably, $\mathrm{ra_{ij}}$ are calculated using the fitted $\mathrm{sca_j f}$ and $\mathrm{sra_i f}$. The formulae, however, are based on the hypothesis that the respective original statistical series contain attractor points. Consequently, the

Table 10 SyS1scr: heteroskedasticity test Breusch–Pagan–Godfrey

Dependent variable: d(sca_1)				Dependent variable: d(sra_2)			
F-statistic	0.901062	Prob. F(2.17)	0.4247	F-statistic	1.017491	Prob. F(4.14)	0.4318
Obs*R-squared	1.916936	Prob. Chi-Square(2)	0.3835	Obs*R-squared	4.279439	Prob. Chi-Square(4)	0.3695
Scaled explained SS	0.928978	Prob. Chi-Square(2)	0.6285	Scaled explained SS	0.96349	Prob. Chi-Square(4)	0.9153
Dependent variable: d(sca_2)				Dependent variable: d(sra_3)			
F-statistic	0.493489	Prob. F(4.14)	0.7408	F-statistic	0.610519	Prob. F(3.15)	0.6185
Obs*R-squared	2.347896	Prob. Chi-Square(4)	0.6721	Obs*R-squared	2.067521	Prob. Chi-Square(3)	0.5585
Scaled explained SS	1.07891	Prob. Chi-Square(4)	0.8976	Scaled explained SS	0.52206	Prob. Chi-Square(3)	0.914
Dependent variable: d(sca_3)				Dependent variable: d(sra_4)			
F-statistic	0.880908	Prob. F(3.14)	0.4746	F-statistic	0.329585	Prob. F(3.16)	0.804
Obs*R-squared	2.858248	Prob. Chi-Square(3)	0.414	Obs*R-squared	1.16401	Prob. Chi-Square(3)	0.7616
Scaled explained SS	2.466576	Prob. Chi-Square(3)	0.4814	Scaled explained SS	0.798201	Prob. Chi-Square(3)	0.8499
Dependent variable: d(sca_4)				Dependent variable: d(sra_5HP)			
F-statistic	1.613982	Prob. F(5.13)	0.2249	F-statistic	0.335166	Prob. F(2.16)	0.7201
Obs*R-squared	7.277122	Prob. Chi-Square(5)	0.2008	Obs*R-squared	0.76401	Prob. Chi-Square(2)	0.6825
Scaled explained SS	7.487449	Prob. Chi-Square(5)	0.1868	Scaled explained SS	0.343187	Prob. Chi-Square(2)	0.8423
Dependent variable: d(sca_5)				Dependent variable: d(sra_5HPd)			
F-statistic	0.757351	Prob. F(3.15)	0.5352	F-statistic	0.651693	Prob. F(4.14)	0.6351
Obs*R-squared	2.499355	Prob. Chi-Square(3)	0.4754	Obs*R-squared	2.982437	Prob. Chi-Square(4)	0.5608
Scaled explained SS	3.524105	Prob. Chi-Square(3)	0.3176	Scaled explained SS	1.916603	Prob. Chi-Square(4)	0.7511

Table 10 (*Continued*)

Dependent variable: d(sca_6)				Dependent variable: d(sra_6)			
F-statistic	0.498536	Prob. F(3.15)	0.6889	F-statistic	0.541944	Prob. F(4.14)	0.7077
Obs*R-squared	1.722675	Prob. Chi-Square(3)	0.6319	Obs*R-squared	2.547519	Prob. Chi-Square(4)	0.6361
Scaled explained SS	2.27106	Prob. Chi-Square(3)	0.5181	Scaled explained SS	2.828426	Prob. Chi-Square(4)	0.5869
Dependent variable: d(sca_7)				Dependent variable: d(sra_7)			
F-statistic	0.776423	Prob. F(5.11)	0.5866	F-statistic	0.082417	Prob. F(4.14)	0.9865
Obs*R-squared	4.434583	Prob. Chi-Square(5)	0.4887	Obs*R-squared	0.437113	Prob. Chi-Square(4)	0.9793
Scaled explained SS	1.311754	Prob. Chi-Square(5)	0.9337	Scaled explained SS	0.426564	Prob. Chi-Square(4)	0.9802
Dependent variable: d(sca_8)				Dependent variable: d(sra_8HP)			
F-statistic	1.183406	Prob. F(4.14)	0.3604	F-statistic	1.320582	Prob. F(5.13)	0.3151
Obs*R-squared	4.800931	Prob. Chi-Square(4)	0.3083	Obs*R-squared	6.399829	Prob. Chi-Square(5)	0.2692
Scaled explained SS	4.819883	Prob. Chi-Square(4)	0.3063	Scaled explained SS	2.752073	Prob. Chi-Square(5)	0.7381
Dependent variable: d(sca_9)				Dependent variable: d(sra_8HPd)			
F-statistic	0.63052	Prob. F(5.12)	0.6804	F-statistic	0.724598	Prob. F(5.13)	0.617
Obs*R-squared	3.745019	Prob. Chi-Square(5)	0.5867	Obs*R-squared	4.141061	Prob. Chi-Square(5)	0.5293
Scaled explained SS	1.619852	Prob. Chi-Square(5)	0.8988	Scaled explained SS	1.882761	Prob. Chi-Square(5)	0.8651
Dependent variable: d(sca_{10})				Dependent variable: d(sra_9)			
F-statistic	0.928894	Prob. F(4.15)	0.4733	F-statistic	0.298999	Prob. F(3.16)	0.8256
Obs*R-squared	3.970571	Prob. Chi-Square(4)	0.41	Obs*R-squared	1.061723	Prob. Chi-Square(3)	0.7863
Scaled explained SS	2.66595	Prob. Chi-Square(4)	0.6152	Scaled explained SS	0.863016	Prob. Chi-Square(3)	0.8343
Dependent variable: d(sra_1)				Dependent variable: d(sra_{10}l)			
F-statistic	0.476573	Prob. F(5.12)	0.7871	F-statistic	1.355643	Prob. F(2.15)	0.2876
Obs*R-squared	2.982131	Prob. Chi-Square(5)	0.7027	Obs*R-squared	2.755483	Prob. Chi-Square(2)	0.2521
Scaled explained SS	0.508079	Prob. Chi-Square(5)	0.9918	Scaled explained SS	1.404621	Prob. Chi-Square(2)	0.4954

Table 11 Correlogram of residuals squared—SyS1scr

Lag	Dependent variable: d(sca_1)				Dependent variable: d(sca_8)				Dependent variable: d(sra_5HP)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	−0.272	−0.272	1.7151	0.19	−0.257	−0.257	1.46	0.227	0.276	0.276	1.6847	0.194
2	−0.096	−0.184	1.9425	0.379	0.066	0	1.5608	0.458	−0.11	−0.201	1.9688	0.374
3	−0.035	−0.13	1.9746	0.578	−0.064	−0.051	1.6631	0.645	0.016	0.122	1.9751	0.578
4	0.164	0.107	2.7103	0.607	−0.091	−0.128	1.8818	0.757	−0.052	−0.134	2.046	0.727
5	−0.196	−0.148	3.8388	0.573	0.12	0.074	2.2944	0.807	−0.167	−0.102	2.8394	0.725

Lag	Dependent variable: d(sca_2)				Dependent variable: d(sca_9)				Dependent variable: d(sra_5HPd)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	−0.092	−0.092	0.1874	0.665	−0.087	−0.087	0.1621	0.687	0.033	0.033	0.0247	0.875
2	0.174	0.167	0.9021	0.637	−0.144	−0.152	0.6266	0.731	−0.106	−0.107	0.2871	0.866
3	−0.118	−0.093	1.2507	0.741	−0.101	−0.133	0.871	0.832	0.117	0.126	0.6284	0.89
4	0.047	0.004	1.31	0.86	−0.169	−0.228	1.6068	0.808	−0.143	−0.17	1.1734	0.882
5	−0.056	−0.018	1.3989	0.924	0.086	−0.003	1.8114	0.875	−0.259	−0.226	3.0863	0.687

Lag	Dependent variable: d(sca_3)				Dependent variable: d(sca_{10})				Dependent variable: d(sra_6)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	−0.168	−0.168	0.5983	0.439	0.127	0.127	0.3738	0.541	−0.033	−0.033	0.0248	0.875
2	0.038	0.01	0.6304	0.73	0.004	−0.012	0.3743	0.829	0.286	0.285	1.9394	0.379
3	−0.044	−0.037	0.6771	0.879	0.171	0.175	1.1293	0.77	−0.238	−0.242	3.3536	0.34
4	−0.009	−0.023	0.6789	0.954	0.259	0.225	2.9779	0.562	−0.097	−0.202	3.6057	0.462
5	−0.198	−0.208	1.7687	0.88	−0.308	−0.394	5.763	0.33	0.004	0.173	3.6061	0.607

Table 11 (*Continued*)

Lag	Dependent variable: d(sca_4)				Dependent variable: d(sra_1)				Dependent variable: d(sra_7)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	−0.022	−0.022	0.0109	0.917	−0.034	−0.034	0.0249	0.875	−0.109	−0.109	0.2637	0.608
2	−0.036	−0.037	0.0421	0.979	−0.147	−0.148	0.5104	0.775	0.081	0.07	0.4167	0.812
3	0.267	0.266	1.821	0.61	−0.224	−0.241	1.7165	0.633	−0.043	−0.027	0.4618	0.927
4	−0.151	−0.154	2.4276	0.658	0.172	0.135	2.4809	0.648	−0.178	−0.194	1.3069	0.86
5	−0.11	−0.1	2.7737	0.735	−0.206	−0.286	3.6588	0.6	0.008	−0.026	1.3088	0.934

Lag	Dependent variable: d(sca_5)				Dependent variable: d(sra_2)				Dependent variable: d(sra_8HP)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	0.083	0.083	0.1544	0.694	−0.05	−0.05	0.0559	0.813	−0.228	−0.228	1.1477	0.284
2	−0.177	−0.186	0.8918	0.64	−0.287	−0.29	1.9901	0.37	−0.085	−0.145	1.3186	0.517
3	−0.066	−0.035	1.0011	0.801	−0.03	−0.069	2.012	0.57	0.282	0.245	3.3084	0.346
4	−0.187	−0.22	1.9314	0.748	−0.192	−0.311	2.997	0.558	−0.224	−0.128	4.6405	0.326
5	0.222	0.262	3.3306	0.649	−0.182	−0.313	3.9447	0.557	0.061	0.039	4.7479	0.447

Lag	Dependent variable: d(sca_6)				Dependent variable: d(sra_3)				Dependent variable: d(sra_8HPd)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	−0.141	−0.141	0.4389	0.508	−0.024	−0.024	0.0131	0.909	−0.224	−0.224	1.1139	0.291
2	−0.159	−0.182	1.0301	0.597	−0.188	−0.189	0.8438	0.656	−0.194	−0.257	1.9937	0.369
3	−0.103	−0.164	1.2972	0.73	−0.394	−0.419	4.709	0.194	0.145	0.037	2.5173	0.472
4	0.066	−0.012	1.4131	0.842	0.051	−0.05	4.7777	0.311	0.068	0.077	2.6402	0.62
5	0.149	0.122	2.0468	0.843	0.017	−0.178	4.7854	0.443	−0.23	−0.17	4.1494	0.528

Table 11 (*Continued*)

Lag	Dependent variable: d(sca_7)				Dependent variable: d(sra_4)				Dependent variable: d(sra_9)			
	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.	AC	PAC	Q-statistic	Prob.
1	0.072	0.072	0.1057	0.745	−0.001	−0.001	4.00E-05	0.995	−0.056	−0.056	0.0733	0.787
2	−0.102	−0.108	0.3299	0.848	0.119	0.119	0.3466	0.841	0.161	0.158	0.7045	0.703
3	−0.221	−0.208	1.4564	0.692	−0.005	−0.004	0.3472	0.951	−0.284	−0.276	2.7994	0.424
4	−0.312	−0.312	3.8731	0.423	−0.017	−0.032	0.3555	0.986	0.37	0.367	6.5593	0.161
5	−0.298	−0.381	6.2633	0.281	0.141	0.144	0.9389	0.967	−0.084	−0.038	6.7672	0.239

Lag	Dependent variable: d(sra_{10}l)			
	AC	PAC	Q-statistic	Prob.
1	−0.042	−0.042	0.0377	0.846
2	0.015	0.013	0.0426	0.979
3	−0.022	−0.021	0.0547	0.997
4	−0.268	−0.27	1.899	0.754
5	0.455	0.467	7.6334	0.178

Table 12 ADF and PP unit root tests of residuals SyS1scr

	Null hypothesis: $ressca_1$ has a unit root		Null hypothesis: $ressca_2$ has a unit root		Null hypothesis: $ressca_3$ has a unit root		Null hypothesis: $ressca_4$ has a unit root	
	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−1.986552	0.0475	−5.140927	0	−4.403522	0.0002	−3.786799	0.0008
ADF, exogenous: constant	−1.948802	0.3045	−4.981806	0.0012	−4.268814	0.0047	−3.671733	0.0145
ADF, exogenous: constant, linear trend	−3.465446	0.0724	−4.908056	0.0059	−4.258263	0.019	−3.603718	0.0583
PP, exogenous: none	−3.405567	0.0018	−13.3349	0.0001	−4.409299	0.0002	−3.786799	0.0008
PP, exogenous: constant	−3.315973	0.0286	−16.20088	0	−4.274438	0.0046	−3.671733	0.0145
PP, exogenous: constant, linear trend	−3.424937	0.0777	−15.56681	0.0001	−4.277874	0.0184	−3.606573	0.058

	Null hypothesis: $ressca_5$ has a unit root		Null hypothesis: $ressca_6$ has a unit root		Null hypothesis: $ressca_7$ has a unit root		Null hypothesis: $ressca_8$ has a unit root	
	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−5.658349	0	−3.995118	0.0005	−5.895841	0	−3.597347	0.0012
ADF, exogenous: constant	−5.487764	0.0004	−3.86399	0.0099	−5.639502	0.0004	−3.488259	0.021
ADF, exogenous: constant, linear trend	−5.309006	0.0026	−3.774645	0.0431	−5.697499	0.0017	−3.470132	0.0735
PP, exogenous: none	−5.658844	0	−3.99659	0.0005	−5.802776	0	−3.570019	0.0013
PP, exogenous: constant	−5.488494	0.0004	−3.865979	0.0098	−5.559396	0.0005	−3.42576	0.0238
PP, exogenous: constant, linear trend	−5.30975	0.0026	−3.775747	0.043	−5.697499	0.0017	−3.584896	0.0602

Table 12 (*Continued*)

	Null hypothesis: $ressca_9$ has a unit root		Null hypothesis: $ressca_{10}$ has a unit root		Null hypothesis: $ressra_1$ has a unit root		Null hypothesis: $ressra_2$ has a unit root	
	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−3.789794	0.0008	−5.27384	0	−3.016457	0.0049	−4.043831	0.0004
ADF, exogenous: constant	−3.663534	0.0155	−5.162812	0.0008	−2.900826	0.066	−3.951321	0.0083
ADF, exogenous: constant, linear trend	−3.646379	0.0559	−5.140881	0.0039	−2.8125	0.2119	−3.97919	0.0298
PP, exogenous: none	−3.76958	0.0009	−7.353143	0	−2.908989	0.0063	−4.043831	0.0004
PP, exogenous: constant	−3.635529	0.0164	−7.09582	0	−2.790106	0.0805	−3.951321	0.0083
PP, exogenous: constant, linear trend	−3.557692	0.0649	−7.493081	0	−2.681021	0.2547	−3.973131	0.0301

	Null hypothesis: $ressra_3$ has a unit root		Null hypothesis: $ressra_4$ has a unit root		Null hypothesis: $ressra_5HP$ has a unit root		Null hypothesis: $ressra_5HPd$ has a unit root	
	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−3.46127	0.0017	−5.532511	0	−3.222773	0.0031	−2.361507	0.0218
ADF, exogenous: constant	−3.361322	0.027	−5.373084	0.0004	−3.091733	0.0465	−2.123058	0.2389
ADF, exogenous: constant, linear trend	−3.142646	0.1267	−4.837124	0.0061	−2.932113	0.1776	−2.265232	0.4268
PP, exogenous: none	−3.46127	0.0017	−5.913703	0	−1.834051	0.0646	−5.664019	0
PP, exogenous: constant	−3.361322	0.027	−5.70976	0.0002	−1.356726	0.5795	−5.853202	0.0002
PP, exogenous: constant, linear trend	−3.142646	0.1267	−9.865782	0	−1.714644	0.7022	−9.964217	0

Table 12 (*Continued*)

	Null hypothesis: ressra$_6$ has a unit root		Null hypothesis: ressra$_7$ has a unit root		Null hypothesis: ressa$_8$HP has a unit root		Null hypothesis: ressra$_8$HPd has a unit root	
	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−3.720831	0.0009	−4.171027	0.0003	−2.832449	0.0074	−5.387255	0
ADF, exogenous: constant	−3.612433	0.0164	−3.94738	0.0089	−3.102695	0.0481	−5.243256	0.0006
ADF, exogenous: constant, linear trend	−3.505032	0.0692	−3.777624	0.0445	−2.922023	0.1835	−5.189448	0.0032
PP, exogenous: none	−3.709671	0.0009	−3.557824	0.0013	−2.757837	0.0087	−6.014966	0
PP, exogenous: constant	−3.598596	0.0168	−3.321521	0.0292	−2.660895	0.0999	−6.301019	0.0001
PP, exogenous: constant, linear trend	−3.489806	0.071	−2.902353	0.1844	−2.489547	0.3283	−8.353103	0

	Null hypothesis: ressra$_9$ has a unit root		Null hypothesis: ressra$_{10}$l has a unit root	
	t-statistic	Prob.	t-statistic	Prob.
ADF, exogenous: none	−2.725678	0.0093	−6.80313	0
ADF, exogenous: constant	−2.640708	0.1026	−6.617948	0.0001
ADF, exogenous: constant, linear trend	−2.683911	0.2527	−6.352981	0.0005
PP, exogenous: none	−2.732364	0.0091	−6.767128	0
PP, exogenous: constant	−2.648713	0.1012	−6.586823	0.0001
PP, exogenous: constant, linear trend	−2.715594	0.2416	−6.352981	0.0005

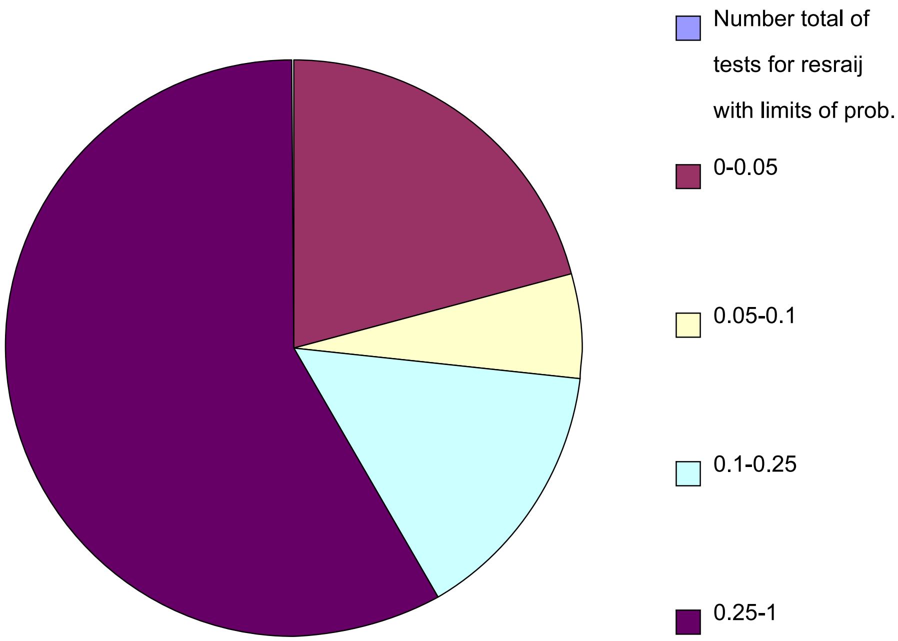


Fig. 11 Distribution of the BDS tests for $resra_{ij}$

analysis of the differences $resra_{ij} = a_{ij} - ra_{ij}$ can be informative. Given the independency of these differences, the assumption that $sca_j f$ and $sra_i f$ include attractor points and that the derived ra_{ij} contain such compatible points becomes plausible since both sca_j and sra_i represent simple summations of the corresponding a_{ij}.

Consequently, we return to the BDS test. As in the previous application, the test was applied to both probabilities (normal and bootstrap) in three options related to the distance (fraction of pairs, standard deviations, and fraction of range) and in five dimensions (2, 3, 4, 5, and 6). For each $resra_{ij}$, 30 p-values were again computed (as before). The distribution of all 3000 p-values is described in Fig. 11. Only one fifth of the p-values do not exceed 0.05. This proportion falls to 8 % in the case of the bootstrap method, which is more relevant for relatively short series.

For this reason, as a general approximation, the serial independence of $resra_{ij}$ differences was assumed. Consequently, the probability of attractor points in the data for a_{ij} cannot be neglected.

6. Further on, the attractor points will be estimated based on the following additional assumptions:

- It is admitted that in the proximity of an attractor point, the values of the respective technical coefficients are relatively stable. In other words, first- and higher-order differences tend to disappear.
- In terms of level, the value of the technical coefficient coincides or is close to that of the attractor point. The importance of the presence of observations in level (I(0) problem) in econometric formulae has already been outlined.

Table 13 Algebraical attractor definitions

Variables (y)	Approximating formula
sca_1, sra_2, sra_4, sra_9, $\log(sra_{10})$	$ay = a_0/-a_1$
sca_8, sca_{10}	$ay = (b_0 + b_2)/-b_1$
sca_2, sra_3	$ay = c_0/-c_1$
sca_5, sca_6, sca_9	$ay = (d_0 + d_4)/-d_1$
sra_8	$ay = e_0/-e_1$
sca_7, sra_5	$ay = (f_0 + f_5)/-f_1$
sra_1, sra_6	$ay = g_0/-g_1$
sca_3	$ay = h_0/-h_1$
sca_4, sra_7	$ay = (i_0 + i_3)/-i_1$ or $= i_0/-i_1$

Table 14 Attractor-points for the colsums and rowsums of technical coefficients

Symbol	Estimation	Symbol	Estimation
$asca_1$	0.488059	$asra_1$	0.508254
$asca_2$	0.633969	$asra_2$	0.546414
$asca_3$	0.904387	$asra_3$	0.674086
$asca_4$	0.603476	$asra_4$	0.389116
$asca_5$	0.566348	$asra_5$	0.467036
$asca_6$	0.5619	$asra_6$	0.564482
$asca_7$	0.722865	$asra_7$	1.337777
$asca_8$	0.536487	$asra_8$	0.130711
$asca_9$	0.438797	$asra_9$	0.37335
$asca_{10}$	0.47579	$asra_{10}$	0.687186

- The attractor points are conceived at long-run levels. For large values of t, it is admitted that $t^{-1} \to 0$ and $t/(t+1) \to 1$.

The scheme containing the main econometric relationships will be adapted to these assumptions, the result being the algebraical expressions of attractors in the 9 types of specifications (Table 13) included in SyS1scr. Their symbols are given the prefix a: $asca_j$ and $asra_i$.

Table 14 presents the approximated attractors for colsums ($asca_j$) and rowsums ($asra_i$) of the I-O coefficients. These estimations were included as column–row restrictions in a new RAS application concerning all a_{ij}. This algorithm was applied on a matrix compounded by the average levels of the respective statistical coefficients (for the entire interval 1989–2009). Table 15 presents the so-obtained attractor points (aa_{ij}).

4 Conclusions

The analysis of Romanian I-O tables (based on surveys for 21 consecutive years) reveals new evidence in favour of the statement that the technical coefficients are volatile (illustrated by the relatively high standard deviation of corresponding series).

Table 15 Attractor-points for individual technical coefficients (aa_{ij})

	j									
	1	2	3	4	5	6	7	8	9	10
aa_{1j}	0.233951	0.001173	0.000136	0.232187	0.034418	0.000132	0.000947	0.000367	0.000277	0.004665
aa_{2j}	0.001076	0.173019	0.270478	0.001162	0.00058	0.006661	0.073396	0.015125	0.002156	0.002762
aa_{3j}	0.024686	0.090712	0.288858	0.022381	0.030654	0.04102	0.095837	0.023173	0.033597	0.023168
aa_{4j}	0.053107	0.0026	0.001616	0.213718	0.009814	0.002945	0.007421	0.004082	0.005101	0.088714
aa_{5j}	0.008545	0.011228	0.003287	0.017918	0.290144	0.019729	0.021376	0.025626	0.009881	0.059303
aa_{6j}	0.017634	0.084122	0.043601	0.011139	0.022303	0.176451	0.037253	0.062144	0.078011	0.031824
aa_{7j}	0.086517	0.086553	0.165247	0.028473	0.076022	0.194198	0.371607	0.173607	0.094814	0.060737
aa_{8j}	0.00491	0.004865	0.014924	0.002182	0.002516	0.003279	0.00486	0.07097	0.007305	0.0149
aa_{9j}	0.013468	0.067402	0.026501	0.014494	0.020011	0.02745	0.028172	0.02357	0.120064	0.032218
aa_{10j}	0.023246	0.085211	0.051111	0.03394	0.055662	0.066024	0.05111	0.114896	0.068838	0.137147

This affects both determinations of I-O coefficients, either in volume (ca_{ij}) or in value terms (a_{ij}); the first is referred to as real volatility and the second as nominal volatility. Their dynamic pattern is similar, as confirmed by three measures: (a) the vectorial angle between the series a_{ij} and ca_{ij}, (b) the Galtung–Pearson correlation (also a cosine of the vectorial angle but between their deviations against the mean) and (c) the binary synchronisation degree.

To verify whether or not the I-O coefficients are serially correlated, the BDS procedure was used as a test covering a large variety of possible deviations from independence in the time data. Again, both forms of technical coefficients were studied. Generally, the serial correlation could not be statistically rejected. It is important to mention that this conclusion resulted from a relatively extended database.

Due to these two circumstances—high volatility and serial correlation—the possible presence of attractors in the technical coefficients series was taken into consideration. Such points would be flexibly interpreted not as unchangeable levels but rather as historical (contextually determined) phenomena. This approach is similar to the manner in which other authors regarded the natural rate of unemployment, for instance, as a weak attractor. Consequently, the evolution of I-O coefficients was conceived as an auto-regressive adaptive process, the differences between the actual coefficients and their long-run levels being influenced by the precedent deviations. Since the available series for sectoral coefficients are, as a rule, non-stationary, more aggregate indicators were employed in econometric analysis (column and row sums of I-O coefficients). The RAS technique was used to transform these into sectoral estimations.

The paper's approach can be considered as an attempt to conciliate the assumption of I-O coefficients' stability with their undisputable volatility.

Further research could improve on the econometric estimations through structural specifications of the technical coefficients, including their stable co-movements. Thus, more complex econometric specifications must be cautiously adopted, but based on a solid economic motivation.

The possible presence of attractors in the series of I-O coefficients also opens a large research space. A deeper investigation of their determinants—technologies, inter-industry linkages, institutional factors—would be interesting from both the theoretical and the applicative perspective. In addition, it would be relevant to clarify the temporal stability of the attractors themselves.

Competing Interests

The author declares that he has no competing interests.

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Statistical and Econometric Appendix

Table 16 Column-sums of the technical coefficients at current prices

Year	sca_1	sca_2	sca_3	sca_4	sca_5	sca_6	sca_7	sca_8	sca_9	sca_{10}
1989	0.491558	0.569253	0.889023	0.76225	0.552646	0.650026	0.812164	0.712277	0.420045	0.496334
1990	0.387324	0.668055	0.956937	0.729538	0.585299	0.622568	0.799226	0.633274	0.466569	0.454735
1991	0.494798	0.663253	0.820943	0.750352	0.675304	0.700584	0.75585	0.622815	0.454685	0.378095
1992	0.498327	0.676749	0.779253	0.737931	0.668211	0.700656	0.742198	0.584504	0.404153	0.346181
1993	0.475942	0.633793	0.722954	0.676025	0.623013	0.659749	0.711613	0.569026	0.393578	0.343785
1994	0.447545	0.625294	0.656678	0.648452	0.561198	0.593076	0.693557	0.513575	0.362277	0.334192
1995	0.431615	0.736073	0.637111	0.657541	0.58757	0.587836	0.740255	0.568219	0.423969	0.283543
1996	0.448299	0.889495	0.705545	0.662567	0.620109	0.639375	0.745313	0.574133	0.434749	0.325155
1997	0.448678	0.885471	0.718332	0.718407	0.614082	0.643057	0.756277	0.568766	0.434086	0.383843
1998	0.500438	0.73034	0.711868	0.671709	0.589266	0.618621	0.750819	0.552626	0.412593	0.373144
1999	0.451623	0.649843	0.710166	0.689681	0.626521	0.645794	0.730459	0.521393	0.410677	0.373031
2000	0.471773	0.620211	0.728855	0.675673	0.578638	0.610767	0.712465	0.551344	0.410928	0.376375
2001	0.464331	0.557372	0.767713	0.626716	0.568639	0.589786	0.727921	0.562682	0.412289	0.420057
2002	0.483088	0.550141	0.765831	0.629274	0.569244	0.582466	0.711277	0.545703	0.412843	0.415685
2003	0.46985	0.636448	0.790705	0.651569	0.586742	0.612382	0.755768	0.558792	0.424581	0.423453
2004	0.470463	0.65786	0.793915	0.654237	0.590792	0.605497	0.748681	0.554347	0.434705	0.423932
2005	0.511133	0.660908	0.793131	0.621407	0.583903	0.581869	0.73793	0.544117	0.431047	0.416438
2006	0.505062	0.665331	0.793829	0.623597	0.585979	0.585482	0.735709	0.543761	0.433134	0.428825
2007	0.547584	0.664387	0.789971	0.623635	0.579907	0.57569	0.716971	0.53191	0.420637	0.425441
2008	0.534281	0.641298	0.796951	0.626553	0.582379	0.579771	0.721889	0.533723	0.425995	0.439046
2009	0.521289	0.624123	0.795017	0.624762	0.592213	0.57092	0.704817	0.541346	0.440151	0.445557

Table 17 Row-sums of the technical coefficients at current prices

Year	sra_1	sra_2	sra_3	sra_4	sra_5	sra_6	sra_7	sra_8	sra_9	sra_{10}
1989	0.879487	0.715536	0.460816	0.424076	0.458559	1.204335	1.512107	0.130762	0.464525	0.105374
1990	0.719968	0.681193	0.595892	0.420332	0.509075	1.137719	1.616523	0.126245	0.382477	0.114103
1991	0.799707	0.519268	0.740962	0.30728	0.55112	1.009835	1.719619	0.122188	0.430851	0.115852
1992	0.758225	0.559776	0.802719	0.323097	0.549017	0.850436	1.632821	0.053936	0.447255	0.160882
1993	0.828402	0.483196	0.668033	0.307312	0.476423	0.608609	1.417821	0.066092	0.700265	0.253325
1994	0.7714	0.513863	0.655478	0.365699	0.488487	0.548466	1.37154	0.071654	0.453217	0.19604
1995	0.720338	0.52918	0.629171	0.344625	0.538629	0.64714	1.444648	0.135043	0.388398	0.276562
1996	0.639786	0.589832	0.583761	0.443051	0.593274	0.77149	1.494947	0.121243	0.492754	0.3146
1997	0.650862	0.624606	0.690994	0.457173	0.549141	0.631484	1.607715	0.100695	0.416869	0.441459
1998	0.701866	0.470438	0.650553	0.375155	0.545836	0.701163	1.429193	0.120339	0.450406	0.466476
1999	0.625048	0.294633	0.851485	0.378145	0.535579	0.65026	1.283071	0.102068	0.546984	0.541914
2000	0.589872	0.455738	0.705737	0.421593	0.504906	0.606695	1.440411	0.099778	0.298352	0.613946
2001	0.560844	0.515316	0.696012	0.423083	0.510963	0.516993	1.462513	0.114338	0.280583	0.616862
2002	0.550552	0.472552	0.796213	0.424217	0.501515	0.471378	1.415838	0.123366	0.281333	0.628588
2003	0.604588	0.565419	0.779686	0.417632	0.475566	0.521081	1.341116	0.167739	0.326985	0.710478
2004	0.628928	0.584544	0.695776	0.419551	0.467175	0.534748	1.390866	0.161495	0.34003	0.711316
2005	0.594292	0.563607	0.625771	0.390167	0.44902	0.562245	1.447483	0.1435	0.355017	0.750782
2006	0.574519	0.63664	0.584961	0.392571	0.425354	0.574501	1.388618	0.196368	0.353318	0.773859
2007	0.542797	0.630615	0.579161	0.414989	0.408277	0.577103	1.402135	0.185372	0.369498	0.766186
2008	0.610861	0.557296	0.590074	0.399415	0.389158	0.569906	1.423817	0.192557	0.376025	0.772777
2009	0.603559	0.541821	0.735107	0.381838	0.384324	0.589331	1.234232	0.244792	0.419811	0.725381

Table 18 System SYS1scr: Specification

$d(sca_1) = c(1) + c(2) * sca_1(-1) + c(501) * d90$
$d(sca_2) = c(3) + c(4) * sca_2(-1) + c(5) * d(sca_2(-1)) + c(502) * d95 + c(503) * d96$
$d(sca_3) = c(6) + c(7) * sca_3(-3) + c(8)/t + c(504) * d96$
$d(sca_4) = c(9) + c(10) * sca_4(-2) + c(11) * d(sca_4, 2) + c(12) * t/(t+1) + c(505) * d99$
$d(sca_5) = c(13) + c(14) * sca_5(-1) + c(15) * d(sca_5(-1)) + c(16) * t/(t+1)$
$d(sca_6) = c(17) + c(18) * sca_6(-1) + c(19) * d(sca_6(-1)) + c(20) * t/(t+1)$
$d(sca_7) = c(21) + c(22) * sca_7(-1) + c(23) * d(sca_7(-1)) + c(24) * d(sca_7(-2)) + c(25) * d(sca_7(-3)) + c(26) * t/(t+1)$
$d(sca_8) = c(27) + c(28) * sca_8(-1) + c(29) * d(sca_8, 2) + c(506) * d96$
$d(sca_9) = c(30) + c(31) * sca_9(-1) + c(32) * d(sca_9(-2)) + c(33) * t/(t+1) + c(507) * d96$
$d(sca_{10}) = c(34) + c(35) * t/(t+1) + c(36) * sca_{10}(-1) + c(508) * d90 + c(509) * d95$
$d(sra_1) = c(37) + c(38) * sra_1(-1) + c(39) * d(sra_1(-2)) + c(40)/t + c(510) * d98$
$d(sra_2) = c(41) + c(42) * sra_2(-1) + c(43) * d(sra_2, 2) + c(511) * d99$
$d(sra_3) = c(44) + c(45) * sra_3(-2) + c(46) * d(sra_3(-1)) + c(512) * d99$
$d(sra_4) = c(47) + c(48) * sra_4(-1) + c(513) * d96 + c(514) * d91$
$d(sra_5HP) = c(49) + c(50) * sra_5HP(-1) + c(51) * d(sra_5HP(-1))$
$d(sra_5HPd) = c(52) * sra_5HPd(-1) + c(53) * d(sra_5HPd(-1)) + c(515) * d93 + c(516) * d96$
$d(sra_6) = c(54) + c(55) * sra_6(-1) + c(56) * d(sra_6, 2) + c(517) * d93$
$d(sra_7) = c(57) + c(58) * sra_7(-2) + c(59) * d(sra_7, 2) + c(60)/t$
$d(sra_8HP) = c(61) + c(62) * sra_8HP(-1) + c(63) * d(sra_8HP, 2) + c(518) * d93 + c(519) * d94$
$d(sra_8HPd) = c(64) * d(sra_8HPd, 2) + c(520) * d92 + c(521) * d95$
$d(sra_9) = c(65) + c(66) * sra_9(-1) + c(522) * d93 + c(523) * d99$
$d(sra_{10}l) = c(67) + c(68) * sra_{10}l(-3) + c(524) * d94$

Table 19 SYS1scr estimated by different methods—sample 1990–2009: OLS—ordinary least squares

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(1)	0.283078	0.08625	3.282047	0.001142962	c(38)	−0.81444	0.205237	−3.96828	8.92E-05
c(2)	−0.58001	0.18071	−3.20961	0.001462231	c(39)	0.33183	0.156979	2.113855	0.035291504
c(501)	−0.10221	0.029494	−3.46533	0.000600906	c(40)	1.076357	0.330764	3.254154	0.001257343
c(3)	0.278431	0.06312	4.411133	1.40E-05	c(510)	0.086243	0.036361	2.371851	0.018283202
c(4)	−0.43919	0.0929	−4.72754	3.39E-06	c(41)	0.23365	0.103312	2.261582	0.02438575
c(5)	0.408362	0.119747	3.410206	0.00073125	c(42)	−0.42761	0.188762	−2.26531	0.024153256
c(502)	0.11044	0.033033	3.343364	0.000924647	c(43)	0.285218	0.122418	2.329865	0.020427225
c(503)	0.153027	0.035167	4.351465	1.81E-05	c(511)	−0.20212	0.050267	−4.02093	7.22E-05
c(6)	0.125699	0.044001	2.85674	0.004556706	c(44)	0.521483	0.142176	3.667871	0.000285804
c(7)	−0.13899	0.062557	−2.22178	0.026988791	c(45)	−0.77361	0.208359	−3.71289	0.00024117
c(8)	−0.24993	0.084743	−2.9493	0.003416579	c(46)	−0.50663	0.210056	−2.41191	0.016424787
c(504)	0.074459	0.017457	4.265162	2.62E-05	c(512)	0.193523	0.068301	2.833381	0.004894547
c(9)	0.924228	0.160358	5.76353	1.92E-08	c(47)	0.13412	0.057677	2.325375	0.020669034
c(10)	−0.75929	0.119904	−6.33248	8.05E-10	c(48)	−0.34468	0.145689	−2.36584	0.018577283
c(11)	0.47183	0.061448	7.678555	1.92E-13	c(513)	0.083091	0.028105	2.956484	0.003340097
c(12)	−0.46602	0.093994	−4.95792	1.15E-06	c(514)	−0.10229	0.027463	−3.72469	0.000230612
c(505)	0.03589	0.013722	2.615495	0.009326674	c(49)	0.013136	0.001677	7.831778	6.93E-14
c(13)	1.064914	0.140304	7.590058	3.43E-13	c(50)	−0.02813	0.003245	−8.66814	2.14E-16
c(14)	−1.18973	0.15666	−7.59436	3.34E-13	c(51)	1.08189	0.015285	70.78026	3.87E-199
c(15)	0.454757	0.129331	3.516215	0.000500165	c(52)	−0.83309	0.158971	−5.24052	2.89E-07
c(16)	−0.39111	0.079436	−4.92362	1.36E-06	c(53)	0.320171	0.130101	2.460931	0.014378755
c(17)	1.216451	0.186703	6.515444	2.77E-10	c(515)	−0.05209	0.013328	−3.90808	0.000113298
c(18)	−1.08361	0.17362	−6.24131	1.36E-09	c(516)	0.042189	0.013558	3.111817	0.002024883

Table 19 (*Continued*)

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(19)	0.465948	0.153538	3.034749	0.002602261	c(54)	0.135167	0.056727	2.382743	0.017760431
c(20)	−0.60757	0.105767	−5.74438	2.13E-08	c(55)	−0.23945	0.084606	−2.83021	0.004942134
c(21)	1.5781	0.285591	5.525739	6.75E-08	c(56)	0.284088	0.132169	2.149434	0.032340176
c(22)	−1.82179	0.303507	−6.00245	5.21E-09	c(517)	−0.14994	0.059384	−2.52487	0.012051054
c(23)	0.765847	0.205822	3.720919	0.000233936	c(57)	1.052576	0.121187	8.685539	1.89E-16
c(24)	0.756215	0.17858	4.234588	2.99E-05	c(58)	−0.78681	0.087866	−8.95465	2.72E-17
c(25)	0.559842	0.182826	3.062164	0.002381463	c(59)	0.522016	0.054793	9.527016	3.95E-19
c(26)	−0.26119	0.113264	−2.30606	0.021738264	c(60)	0.773993	0.126356	6.12549	2.62E-09
c(27)	0.20165	0.054576	3.69482	0.000258233	c(61)	−0.02272	0.002453	−9.26173	2.86E-18
c(28)	−0.37587	0.097205	−3.86677	0.000133287	c(62)	0.17378	0.012884	13.48847	3.24E-33
c(29)	0.414938	0.077282	5.369165	1.51E-07	c(63)	7.618111	1.251823	6.085614	3.27E-09
c(506)	0.038061	0.013083	2.909294	0.003872887	c(518)	−0.00564	0.001664	−3.38751	0.00079222
c(30)	0.226448	0.075907	2.983219	0.003068886	c(519)	−0.00521	0.001714	−3.04001	0.002558513
c(31)	−1.23202	0.16691	−7.38132	1.33E-12	c(64)	0.394639	0.079062	4.991487	9.80E-07
c(32)	0.557367	0.138947	4.011371	7.50E-05	c(520)	−0.03994	0.014916	−2.67737	0.007798128
c(33)	0.314156	0.058156	5.401991	1.28E-07	c(521)	0.039854	0.014704	2.710374	0.007078646
c(507)	0.044864	0.011907	3.767881	0.000195553	c(65)	0.274047	0.055718	4.918437	1.39E-06
c(34)	−0.15911	0.055598	−2.86172	0.004487515	c(66)	−0.73402	0.134082	−5.47443	8.81E-08
c(35)	0.371868	0.058992	6.303751	9.50E-10	c(522)	0.307258	0.059092	5.199688	3.54E-07
c(36)	−0.44718	0.075925	−5.88968	9.68E-09	c(523)	0.153138	0.059135	2.589621	0.010041828
c(508)	0.091543	0.022503	4.067977	5.96E-05	c(67)	−0.07714	0.028744	−2.68356	0.00765829
c(509)	−0.06748	0.014801	−4.55935	7.28E-06	c(68)	−0.20561	0.024533	−8.38109	1.62E-15
c(37)	0.413941	0.106503	3.886657	0.00012328	c(524)	−0.62241	0.073826	−8.43065	1.15E-15

Table 20 SYS1scr estimated by different methods—sample 1990–2009: WLS—weighted least squares

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(1)	0.283078	0.079519	3.55988	0.000426566	c(38)	−0.81444	0.174418	−4.66946	4.43E-06
c(2)	−0.58001	0.166606	−3.48131	0.000567383	c(39)	0.33183	0.133406	2.487366	0.013371939
c(501)	−0.10221	0.027192	−3.75867	0.000202576	c(40)	1.076357	0.281095	3.829153	0.000154358
c(3)	0.278431	0.054182	5.138814	4.79E-07	c(510)	0.086243	0.030901	2.79095	0.00556695
c(4)	−0.43919	0.079745	−5.50742	7.43E-08	c(41)	0.23365	0.091796	2.545326	0.011380659
c(5)	0.408362	0.10279	3.97277	8.76E-05	c(42)	−0.42761	0.167719	−2.54953	0.011247182
c(502)	0.11044	0.028355	3.894901	0.000119343	c(43)	0.285218	0.108771	2.622176	0.00914958
c(503)	0.153027	0.030187	5.069303	6.73E-07	c(511)	−0.20212	0.044664	−4.5254	8.47E-06
c(6)	0.125699	0.038805	3.239239	0.001322776	c(44)	0.521483	0.126327	4.128053	4.66E-05
c(7)	−0.13899	0.05517	−2.51926	0.012240942	c(45)	−0.77361	0.185132	−4.17872	3.77E-05
c(8)	−0.24993	0.074736	−3.3442	0.000921969	c(46)	−0.50663	0.186639	−2.71451	0.006992757
c(504)	0.074459	0.015396	4.836239	2.05E-06	c(512)	0.193523	0.060687	3.188865	0.001567833
c(9)	0.924228	0.13765	6.714309	8.48E-11	c(47)	0.13412	0.051588	2.599849	0.009753476
c(10)	−0.75929	0.102925	−7.37712	1.37E-12	c(48)	−0.34468	0.130308	−2.64509	0.00856481
c(11)	0.47183	0.052746	8.945246	2.91E-17	c(513)	0.083091	0.025138	3.30545	0.001054529
c(12)	−0.46602	0.080684	−5.7758	1.80E-08	c(514)	−0.10229	0.024564	−4.16433	4.01E-05
c(505)	0.03589	0.011779	3.04696	0.002501691	c(49)	0.013136	0.001539	8.534482	5.52E-16
c(13)	1.064914	0.124663	8.542329	5.22E-16	c(50)	−0.02813	0.002978	−9.44589	7.25E-19
c(14)	−1.18973	0.139196	−8.54717	5.05E-16	c(51)	1.08189	0.014027	77.131	1.49E-210
c(15)	0.454757	0.114914	3.957369	9.32E-05	c(52)	−0.83309	0.14125	−5.89801	9.25E-09
c(16)	−0.39111	0.070581	−5.54135	6.22E-08	c(53)	0.320171	0.115598	2.769686	0.005934489
c(17)	1.216451	0.16589	7.33289	1.82E-12	c(515)	−0.05209	0.011843	−4.3984	1.48E-05
c(18)	−1.08361	0.154265	−7.02436	1.27E-11	c(516)	0.042189	0.012046	3.502234	0.000526139

Table 20 (*Continued*)

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(19)	0.465948	0.136422	3.415497	0.000717678	c(54)	0.135167	0.050404	2.681688	0.007700416
c(20)	−0.60757	0.093977	−6.46509	3.72E-10	c(55)	−0.23945	0.075174	−3.18529	0.001586701
c(21)	1.5781	0.229729	6.869395	3.31E-11	c(56)	0.284088	0.117435	2.419109	0.016109025
c(22)	−1.82179	0.244141	−7.46203	7.91E-13	c(517)	−0.14994	0.052764	−2.84165	0.004772473
c(23)	0.765847	0.165563	4.62571	5.40E-06	c(57)	1.052576	0.107678	9.775252	6.02E-20
c(24)	0.756215	0.14365	5.264284	2.57E-07	c(58)	−0.78681	0.078071	−10.0781	5.87E-21
c(25)	0.559842	0.147065	3.806769	0.000168351	c(59)	0.522016	0.048685	10.7223	3.70E-23
c(26)	−0.26119	0.091109	−2.86681	0.004417774	c(60)	0.773993	0.11227	6.894012	2.84E-11
c(27)	0.20165	0.048492	4.158383	4.11E-05	c(61)	−0.02272	0.002105	−10.7896	2.16E-23
c(28)	−0.37587	0.086369	−4.35191	1.81E-05	c(62)	0.17378	0.011059	15.71359	9.33E-42
c(29)	0.414938	0.068666	6.042796	4.16E-09	c(63)	7.618111	1.074559	7.089526	8.47E-12
c(506)	0.038061	0.011624	3.274303	0.001173709	c(518)	−0.00564	0.001428	−3.94633	9.73E-05
c(30)	0.226448	0.064509	3.510344	0.000510922	c(519)	−0.00521	0.001471	−3.5415	0.000456213
c(31)	−1.23202	0.141846	−8.68557	1.89E-16	c(64)	0.394639	0.072553	5.439346	1.06E-07
c(32)	0.557367	0.118082	4.720168	3.51E-06	c(520)	−0.03994	0.013688	−2.9176	0.003773847
c(33)	0.314156	0.049423	6.356506	7.00E-10	c(521)	0.039854	0.013493	2.953561	0.003371041
c(507)	0.044864	0.010119	4.433653	1.27E-05	c(65)	0.274047	0.049836	5.498979	7.76E-08
c(34)	−0.15911	0.048149	−3.30443	0.001058255	c(66)	−0.73402	0.119926	−6.12059	2.69E-09
c(35)	0.371868	0.051088	7.278945	2.56E-12	c(522)	0.307258	0.052853	5.813428	1.47E-08
c(36)	−0.44718	0.065753	−6.80082	5.02E-11	c(523)	0.153138	0.052892	2.895285	0.00404538
c(508)	0.091543	0.019489	4.697295	3.90E-06	c(67)	−0.07714	0.026239	−2.9397	0.003521415
c(509)	−0.06748	0.012818	−5.26469	2.56E-07	c(68)	−0.20561	0.022396	−9.18103	5.19E-18
c(37)	0.413941	0.09051	4.573417	6.84E-06	c(524)	−0.62241	0.067394	−9.23532	3.48E-18

Table 21 SYS1scr estimated by different methods—sample 1990–2009: SUR—seemingly unrelated regression

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(1)	0.234957	0.058079	4.045498	6.53E-05	c(38)	−0.84056	0.100483	−8.36515	1.81E-15
c(2)	−0.48089	0.121424	−3.9604	9.20E-05	c(39)	0.34597	0.079175	4.369712	1.68E-05
c(501)	−0.11051	0.01443	−7.65865	2.19E-13	c(40)	1.137276	0.173371	6.559794	2.13E-10
c(3)	0.272854	0.020134	13.55169	1.87E-33	c(510)	0.09166	0.016681	5.494938	7.92E-08
c(4)	−0.42622	0.028895	−14.751	4.96E-38	c(41)	0.249617	0.026854	9.295474	2.23E-18
c(5)	0.400249	0.039501	10.13262	3.85E-21	c(42)	−0.44738	0.046709	−9.57791	2.69E-19
c(502)	0.120347	0.01254	9.597298	2.32E-19	c(43)	0.270023	0.025781	10.4738	2.66E-22
c(503)	0.147105	0.013128	11.2054	7.52E-25	c(511)	−0.20361	0.012093	−16.8361	3.88E-46
c(6)	0.115054	0.014094	8.163217	7.33E-15	c(44)	0.548312	0.045754	11.98381	1.22E-27
c(7)	−0.12727	0.019723	−6.45284	4.00E-10	c(45)	−0.81821	0.065265	−12.5368	1.15E-29
c(8)	−0.24232	0.034329	−7.05859	1.03E-11	c(46)	−0.54969	0.065482	−8.39457	1.47E-15
c(504)	0.082137	0.006536	12.56645	8.97E-30	c(512)	0.194547	0.029549	6.583848	1.85E-10
c(9)	0.943513	0.043286	21.79729	1.75E-65	c(47)	0.15916	0.025087	6.344446	7.51E-10
c(10)	−0.75699	0.029589	−25.5831	9.35E-80	c(48)	−0.40294	0.062287	−6.46904	3.64E-10
c(11)	0.475233	0.013396	35.47534	1.29E-113	c(513)	0.090953	0.014434	6.301505	9.62E-10
c(12)	−0.48929	0.029803	−16.4175	1.68E-44	c(514)	−0.08508	0.012256	−6.94239	2.11E-11
c(505)	0.036983	0.002789	13.25975	2.35E-32	c(49)	0.01349	0.000625	21.57141	1.30E-64
c(13)	1.06234	0.053497	19.85786	5.74E-58	c(50)	−0.02875	0.001192	−24.1101	2.82E-74
c(14)	−1.21682	0.053302	−22.8289	1.97E-69	c(51)	1.085785	0.008216	132.1608	6.73E-284
c(15)	0.466725	0.044263	10.54438	1.52E-22	c(52)	−0.86156	0.060809	−14.1682	8.52E-36
c(16)	−0.37179	0.042773	−8.6921	1.80E-16	c(53)	0.328044	0.049865	6.578703	1.91E-10
c(17)	1.251569	0.07414	16.88106	2.59E-46	c(515)	−0.05817	0.005475	−10.624	8.09E-23
c(18)	−1.13099	0.066292	−17.0608	5.13E-47	c(516)	0.037513	0.005639	6.65296	1.22E-10

Table 21 (*Continued*)

	Coefficient	Std. error	t-statistic	Prob.		Coefficient	Std. error	t-statistic	Prob.
c(19)	0.461616	0.053557	8.619101	3.03E-16	c(54)	0.140982	0.026324	5.355615	1.62E-07
c(20)	−0.61549	0.050982	−12.0727	5.80E-28	c(55)	−0.24846	0.035189	−7.0609	1.01E-11
c(21)	1.591889	0.090008	17.68604	1.82E-49	c(56)	0.280768	0.038032	7.382508	1.32E-12
c(22)	−1.83248	0.092471	−19.8168	8.30E-58	c(517)	−0.17261	0.023242	−7.42684	9.93E-13
c(23)	0.774811	0.067097	11.54767	4.56E-26	c(57)	0.98605	0.044398	22.2092	4.59E-67
c(24)	0.739849	0.054287	13.62841	9.59E-34	c(58)	−0.74137	0.031644	−23.4283	1.05E-71
c(25)	0.558427	0.053313	10.47448	2.64E-22	c(59)	0.523095	0.017136	30.52647	2.46E-97
c(26)	−0.268	0.04471	−5.99429	5.45E-09	c(60)	0.773597	0.058144	13.30473	1.59E-32
c(27)	0.197595	0.020551	9.614966	2.03E-19	c(61)	−0.0229	0.001283	−17.8516	4.08E-50
c(28)	−0.36951	0.035719	−10.3451	7.32E-22	c(62)	0.175333	0.00685	25.59751	8.27E-80
c(29)	0.400592	0.018888	21.20883	3.25E-63	c(63)	7.671487	0.548712	13.98089	4.41E-35
c(506)	0.038445	0.004267	9.009607	1.82E-17	c(518)	−0.0055	0.000613	−8.96842	2.46E-17
c(30)	0.213569	0.029681	7.195569	4.35E-12	c(519)	−0.00513	0.000533	−9.62612	1.87E-19
c(31)	−1.18993	0.056699	−20.9867	2.35E-62	c(64)	0.430947	0.030779	14.0012	3.69E-35
c(32)	0.545298	0.040457	13.47857	3.53E-33	c(520)	−0.03993	0.006948	−5.7465	2.10E-08
c(33)	0.308919	0.028288	10.92042	7.55E-24	c(521)	0.037305	0.00608	6.135315	2.48E-09
c(507)	0.046084	0.004433	10.39612	4.90E-22	c(65)	0.244369	0.023271	10.50116	2.14E-22
c(34)	−0.13306	0.025963	−5.12513	5.12E-07	c(66)	−0.67082	0.050755	−13.2168	3.41E-32
c(35)	0.351948	0.02466	14.27219	3.41E-36	c(522)	0.304342	0.029036	10.48162	2.50E-22
c(36)	−0.46841	0.030641	−15.2871	4.22E-40	c(523)	0.148176	0.021366	6.9352	2.21E-11
c(508)	0.089716	0.007458	12.02994	8.30E-28	c(67)	−0.08253	0.016711	−4.93861	1.26E-06
c(509)	−0.06953	0.005683	−12.2339	1.50E-28	c(68)	−0.21785	0.011922	−18.2732	9.07E-52
c(37)	0.425266	0.052871	8.043437	1.66E-14	c(524)	−0.64568	0.026648	−24.2303	9.97E-75

Table 22 SYS1scr estimated by different methods—sample 1990–2009: GLM—generalized linear models with bootstrap

	Coefficient	Std. error	z	Prob.		Coefficient	Std. error	z	Prob.
c(1)	0.283078	0.082689	3.42	0.001	c(38)	−0.81444	0.188264	−4.33	0
c(2)	−0.58001	0.170839	−3.4	0.001	c(39)	0.33183	0.159535	2.08	0.038
c(501)	−0.10221	0.004737	−21.58	0	c(40)	1.076356	0.332231	3.24	0.001
c(3)	0.278431	0.101581	2.74	0.006	c(510)	0.086243	0.011943	7.22	0
c(4)	−0.43919	0.153461	−2.86	0.004	c(41)	0.23365	0.088917	2.63	0.009
c(5)	0.408363	0.140692	2.9	0.004	c(42)	−0.42761	0.163947	−2.61	0.009
c(502)	0.11044	0.006218	17.76	0	c(43)	0.285218	0.091688	3.11	0.002
c(503)	0.153027	0.014458	10.58	0	c(511)	−0.20212	0.015286	−13.22	0
c(6)	0.125699	0.041312	3.04	0.002	c(44)	0.521483	0.108545	4.8	0
c(7)	−0.13899	0.050457	−2.75	0.006	c(45)	−0.77361	0.158828	−4.87	0
c(8)	−0.24993	0.085994	−2.91	0.004	c(46)	−0.50663	0.175199	−2.89	0.004
c(504)	0.074459	0.005317	14	0	c(512)	0.193523	0.011274	17.17	0
c(9)	0.924228	0.094083	9.82	0	c(47)	0.13412	0.047279	2.84	0.005
c(10)	−0.75929	0.067526	−11.24	0	c(48)	−0.34468	0.118808	−2.9	0.004
c(11)	0.47183	0.047361	9.96	0	c(513)	0.083091	0.007286	11.4	0
c(12)	−0.46602	0.056969	−8.18	0	c(514)	−0.10229	0.004784	−21.38	0
c(505)	0.03589	0.004272	8.4	0	c(49)	0.013136	0.001949	6.74	0
c(13)	1.064914	0.167703	6.35	0	c(50)	−0.02813	0.003768	−7.46	0
c(14)	−1.18973	0.193828	−6.14	0	c(51)	1.08189	0.01169	92.55	0
c(15)	0.454757	0.165187	2.75	0.006	c(52)	−0.83309	0.153003	−5.44	0
c(16)	−0.39111	0.087032	−4.49	0	c(53)	0.320171	0.137497	2.33	0.02
c(17)	1.216451	0.209223	5.81	0	c(515)	−0.05209	0.005145	−10.12	0
c(18)	−1.08361	0.17854	−6.07	0	c(516)	0.042189	0.005872	7.18	0

Table 22 (*Continued*)

	Coefficient	Std. error	z	Prob.		Coefficient	Std. error	z	Prob.
c(19)	0.465948	0.172046	2.71	0.007	c(54)	0.135167	0.065899	2.05	0.04
c(20)	−0.60757	0.12657	−4.8	0	c(55)	−0.23945	0.111845	−2.14	0.032
c(21)	1.5781	0.291682	5.41	0	c(56)	0.284088	0.142332	2	0.046
c(22)	−1.82179	0.352457	−5.17	0	c(517)	−0.14994	0.029437	−5.09	0
c(23)	0.765847	0.237994	3.22	0.001	c(57)	1.052575	0.100791	10.44	0
c(24)	0.756215	0.238152	3.18	0.001	c(58)	−0.78681	0.075003	−10.49	0
c(25)	0.559842	0.191824	2.92	0.004	c(59)	0.522016	0.060821	8.58	0
c(26)	−0.26119	0.109698	−2.38	0.017	c(60)	0.773993	0.15599	4.96	0
c(27)	0.20165	0.037095	5.44	0	c(61)	−0.02272	0.001404	−16.18	0
c(28)	−0.37587	0.06611	−5.69	0	c(62)	0.173781	0.007403	23.47	0
c(29)	0.414938	0.064205	6.46	0	c(63)	7.618141	0.782133	9.74	0
c(506)	0.038061	0.004809	7.91	0	c(518)	−0.00564	0.000399	−14.12	0
c(30)	0.226448	0.115659	1.96	0.05	c(519)	−0.00521	0.000485	−10.75	0
c(31)	−1.23202	0.246907	−4.99	0	c(64)	0.394639	0.049193	8.02	0
c(32)	0.557367	0.151548	3.68	0	c(520)	−0.03994	0.003189	−12.52	0
c(33)	0.314156	0.064189	4.89	0	c(521)	0.039854	0.002782	14.32	0
c(507)	0.044864	0.006176	7.26	0	c(65)	0.274047	0.036869	7.43	0
c(34)	−0.15911	0.032982	−4.82	0	c(66)	−0.73402	0.096623	−7.6	0
c(35)	0.371868	0.0525	7.08	0	c(522)	0.307258	0.009443	32.54	0
c(36)	−0.44718	0.072451	−6.17	0	c(523)	0.153138	0.009668	15.84	0
c(508)	0.091543	0.018952	4.83	0	c(67)	−0.07714	0.01713	−4.5	0
c(509)	−0.06748	0.004226	−15.97	0	c(68)	−0.20561	0.019253	−10.68	0
c(37)	0.413941	0.095647	4.33	0	c(524)	−0.62241	0.030516	−20.4	0

Table 23 Comparative estimation output OLS–SUR

Equation: $d(sca_1) = c(1) + c(2) * sca_1(-1) + c(501) * d90$

OLS				SUR			
R-squared	0.592041	Mean dependent var.	0.001486537	R-squared	0.582578	Mean dependent var.	0.001486537
Adjusted R-squared	0.544045	S.D. dependent var.	0.04237619	Adjusted R-squared	0.533469	S.D. dependent var.	0.04237619
S.E. of regression	0.028614	Sum squared resid.	0.013919204	S.E. of regression	0.028944	Sum squared resid.	0.014242074
Durbin–Watson stat.	1.538095			Durbin–Watson stat.	1.721237		

Equation: $d(sca_2) = c(3) + c(4) * sca_2(-1) + c(5) * d(sca_2(-1)) + c(502) * d95 + c(503) * d96$

OLS				SUR			
R-squared	0.827101	Mean dependent var.	−0.00231224	R-squared	0.822768	Mean dependent var.	−0.00231224
Adjusted R-squared	0.777702	S.D. dependent var.	0.067510188	Adjusted R-squared	0.77213	S.D. dependent var.	0.067510188
S.E. of regression	0.03183	Sum squared resid.	0.014184143	S.E. of regression	0.032227	Sum squared resid.	0.014539665
Durbin–Watson stat.	2.754131			Durbin–Watson stat.	2.693471		

Equation: $d(sca_3) = c(6) + c(7) * sca_3(-3) + c(8)/t + c(504) * d96$

OLS				SUR			
R-squared	0.778591	Mean dependent var.	−0.00144036	R-squared	0.773913	Mean dependent var.	−0.00144036
Adjusted R-squared	0.731147	S.D. dependent var.	0.031713173	Adjusted R-squared	0.725466	S.D. dependent var.	0.031713173
S.E. of regression	0.016444	Sum squared resid.	0.003785497	S.E. of regression	0.016616	Sum squared resid.	0.003865477
Durbin–Watson stat.	2.002707			Durbin–Watson stat.	1.987606		

Table 23 (*Continued*)

Equation: $d(sca_4) = c(9) + c(10) * sca_4(-2) + c(11) * d(sca_4, 2) + c(12) * t/(t+1) + c(505) * d96$

OLS				SUR			
R-squared	0.893072	Mean dependent var.	−0.00551455	R-squared	0.890453	Mean dependent var.	−0.00551455
Adjusted R-squared	0.862522	S.D. dependent var.	0.028411694	Adjusted R-squared	0.859154	S.D. dependent var.	0.028411694
S.E. of regression	0.010535	Sum squared resid.	0.001553663	S.E. of regression	0.010663	Sum squared resid.	0.00159172
Durbin–Watson stat.	1.833085			Durbin–Watson stat.	1.813972		

Equation: $d(sca_5) = c(13) + c(14) * sca_5(-1) + c(15) * d(sca_5(-1)) + c(16) * t/(t+1)$

OLS				SUR			
R-squared	0.805431	Mean dependent var.	0.000363901	R-squared	0.801683	Mean dependent var.	0.000363901
Adjusted R-squared	0.766517	S.D. dependent var.	0.033923317	Adjusted R-squared	0.76202	S.D. dependent var.	0.033923317
S.E. of regression	0.016392	Sum squared resid.	0.004030354	S.E. of regression	0.016549	Sum squared resid.	0.004107978
Durbin–Watson stat.	2.597269			Durbin–Watson stat.	2.536249		

Equation: $d(sca_6) = c(17) + c(18) * sca_6(-1) + c(19) * d(sca_6(-1)) + c(20) * t/(t+1)$

OLS				SUR			
R-squared	0.741118	Mean dependent var.	−0.00271833	R-squared	0.737032	Mean dependent var.	−0.00271833
Adjusted R-squared	0.689341	S.D. dependent var.	0.03293319	Adjusted R-squared	0.684438	S.D. dependent var.	0.03293319
S.E. of regression	0.018356	Sum squared resid.	0.005054087	S.E. of regression	0.0185	Sum squared resid.	0.005133851
Durbin–Watson stat.	1.930535			Durbin–Watson stat.	1.811626		

Table 23 (*Continued*)

Equation: $d(sca_7) = c(21) + c(22) * sca_7(-1) + c(23) * d(sca_7(-1)) + c(24) * d(sca_7(-2)) + c(25) * d(sca_7(-3)) + c(26) * t/(t+1)$

OLS				SUR			
R-squared	0.776545	Mean dependent var.	−0.00219888	R-squared	0.775659	Mean dependent var.	−0.00219888
Adjusted R-squared	0.674974	S.D. dependent var.	0.021803938	Adjusted R-squared	0.673686	S.D. dependent var.	0.021803938
S.E. of regression	0.012431	Sum squared resid.	0.001699731	S.E. of regression	0.012455	Sum squared resid.	0.001706466
Durbin–Watson stat.	2.45839			Durbin–Watson stat.	2.449675		

Equation: $d(sca_8) = c(27) + c(28) * sca_8(-1) + c(29) * d(sca_8, 2) + c(506) * d96$

OLS				SUR			
R-squared	0.79341	Mean dependent var.	−0.00483833	R-squared	0.792092	Mean dependent var.	−0.00483833
Adjusted R-squared	0.752092	S.D. dependent var.	0.024203015	Adjusted R-squared	0.75051	S.D. dependent var.	0.024203015
S.E. of regression	0.012051	Sum squared resid.	0.002178319	S.E. of regression	0.012089	Sum squared resid.	0.002192212
Durbin–Watson stat.	1.725176			Durbin–Watson stat.	1.776138		

Equation: $d(sca_9) = c(30) + c(31) * sca_9(-1) + c(32) * d(sca_9(-2)) + c(33) * t/(t+1) + c(507) * d96$

OLS				SUR			
R-squared	0.846468	Mean dependent var.	−0.00080741	R-squared	0.845128	Mean dependent var.	−0.00080741
Adjusted R-squared	0.799227	S.D. dependent var.	0.022579243	Adjusted R-squared	0.797475	S.D. dependent var.	0.022579243
S.E. of regression	0.010117	Sum squared resid.	0.001330662	S.E. of regression	0.010161	Sum squared resid.	0.001342271
Durbin–Watson stat.	1.832536			Durbin–Watson stat.	1.928251		

Table 23 (*Continued*)

Equation: $d(sca_{10}) = c(34) + c(35) * t/(t+1) + c(36) * sca_{10}(-1) + c(508) * d90 + c(509) * d95$

OLS				SUR			
R-squared	0.848972	Mean dependent var.	−0.00253882	R-squared	0.846468	Mean dependent var.	−0.00253882
Adjusted R-squared	0.808698	S.D. dependent var.	0.031535026	Adjusted R-squared	0.805526	S.D. dependent var.	0.031535026
S.E. of regression	0.013793	Sum squared resid.	0.002853624	S.E. of regression	0.013907	Sum squared resid.	0.002900946
Durbin–Watson stat.	2.4873			Durbin–Watson stat.	2.432552		

Equation: $d(sra_1) = c(37) + c(38) * sra_1(-1) + c(39) * d(sra_1(-2)) + c(40)/t + c(510) * d98$

OLS				SUR			
R-squared	0.611242	Mean dependent var.	−0.01089713	R-squared	0.609433	Mean dependent var.	−0.01089713
Adjusted R-squared	0.491625	S.D. dependent var.	0.047563903	Adjusted R-squared	0.489258	S.D. dependent var.	0.047563903
S.E. of regression	0.033913	Sum squared resid.	0.014951435	S.E. of regression	0.033992	Sum squared resid.	0.015021033
Durbin–Watson stat.	1.439341			Durbin–Watson stat.	1.431766		

Equation: $d(sra_2) = c(41) + c(42) * sra_2(-1) + c(43) * d(sra_2, 2) + c(511) * d99$

OLS				SUR			
R-squared	0.777682	Mean dependent var.	−0.00733534	R-squared	0.773894	Mean dependent var.	−0.00733534
Adjusted R-squared	0.733218	S.D. dependent var.	0.089810856	Adjusted R-squared	0.728673	S.D. dependent var.	0.089810856
S.E. of regression	0.046388	Sum squared resid.	0.032277867	S.E. of regression	0.046782	Sum squared resid.	0.032827865
Durbin–Watson stat.	1.66777			Durbin–Watson stat.	1.64911		

Table 23 (*Continued*)

Equation: $d(sra_3) = c(44) + c(45) * sra_3(-2) + c(46) * d(sra_3(-1)) + c(512) * d99$

OLS				SUR			
R-squared	0.604261	Mean dependent var.	0.007327141	R-squared	0.601432	Mean dependent var.	0.007327141
Adjusted R-squared	0.525113	S.D. dependent var.	0.095697545	Adjusted R-squared	0.521718	S.D. dependent var.	0.095697545
S.E. of regression	0.065947	Sum squared resid.	0.065235376	S.E. of regression	0.066182	Sum squared resid.	0.065701731
Durbin–Watson stat.	1.611126			Durbin–Watson stat.	1.521897		

Equation: $d(sra_4) = c(47) + c(48) * sra_4(-1) + c(513) * d96 + c(514) * d91$

OLS				SUR			
R-squared	0.701614	Mean dependent var.	−0.00211187	R-squared	0.683711	Mean dependent var.	−0.00211187
Adjusted R-squared	0.645667	S.D. dependent var.	0.044451546	Adjusted R-squared	0.624407	S.D. dependent var.	0.044451546
S.E. of regression	0.02646	Sum squared resid.	0.011202251	S.E. of regression	0.027242	Sum squared resid.	0.011874394
Durbin–Watson stat.	2.497302			Durbin–Watson stat.	2.320523		

Equation: $d(sra_5HP) = c(49) + c(50) * sra_5HP(-1) + c(51) * d(sra_5HP(-1))$

OLS				SUR			
R-squared	0.998586	Mean dependent var.	−0.00657374	R-squared	0.998573	Mean dependent var.	−0.00657374
Adjusted R-squared	0.998409	S.D. dependent var.	0.00887352	Adjusted R-squared	0.998394	S.D. dependent var.	0.00887352
S.E. of regression	0.000354	Sum squared resid.	2.00E-06	S.E. of regression	0.000356	Sum squared resid.	2.02E-06
Durbin–Watson stat.	0.584091			Durbin–Watson stat.	0.585266		

Table 23 (*Continued*)

Equation: $d(sra_5HPd) = c(52) * sra_5HPd(-1) + c(53) * d(sra_5HPd(-1)) + c(515) * d93 + c(516) * d96$

OLS				SUR			
R-squared	0.852908	Mean dependent var.	7.88E-06	R-squared	0.848174	Mean dependent var.	7.88E-06
Adjusted R-squared	0.82349	S.D. dependent var.	0.029321112	Adjusted R-squared	0.817809	S.D. dependent var.	0.029321112
S.E. of regression	0.012319	Sum squared resid.	0.00227626	S.E. of regression	0.012515	Sum squared resid.	0.002349518
Durbin–Watson stat.	1.956297			Durbin–Watson stat.	1.905226		

Equation: $d(sra_6) = c(54) + c(55) * sra_6(-1) + c(56) * d(sra_6, 2) + c(517) * d93$

OLS				SUR			
R-squared	0.705175	Mean dependent var.	−0.02886253	R-squared	0.701184	Mean dependent var.	−0.02886253
Adjusted R-squared	0.64621	S.D. dependent var.	0.093185537	Adjusted R-squared	0.64142	S.D. dependent var.	0.093185537
S.E. of regression	0.055427	Sum squared resid.	0.046082199	S.E. of regression	0.055801	Sum squared resid.	0.046706118
Durbin–Watson stat.	1.764954			Durbin–Watson stat.	1.907709		

Equation: $d(sra_7) = c(57) + c(58) * sra_7(-2) + c(59) * d(sra_7, 2) + c(60)/t$

OLS				SUR			
R-squared	0.920327	Mean dependent var.	−0.02012059	R-squared	0.918205	Mean dependent var.	−0.02012059
Adjusted R-squared	0.904393	S.D. dependent var.	0.108371317	Adjusted R-squared	0.901847	S.D. dependent var.	0.108371317
S.E. of regression	0.033509	Sum squared resid.	0.016842702	S.E. of regression	0.033952	Sum squared resid.	0.017291216
Durbin–Watson stat.	1.736261			Durbin–Watson stat.	1.701985		

Table 23 (*Continued*)

Equation: $\mathrm{d}(\mathrm{sra}_8\mathrm{HP}) = \mathrm{c}(61) + \mathrm{c}(62) * \mathrm{sra}_8\mathrm{HP}(-1) + \mathrm{c}(63) * \mathrm{d}(\mathrm{sra}_8\mathrm{HP}, 2) + \mathrm{c}(518) * \mathrm{d}93 + \mathrm{c}(519) * \mathrm{d}94$

OLS				SUR			
R-squared	0.941453	Mean dependent var.	0.005926559	R-squared	0.941163	Mean dependent var.	0.005926559
Adjusted R-squared	0.924725	S.D. dependent var.	0.005647312	Adjusted R-squared	0.924352	S.D. dependent var.	0.005647312
S.E. of regression	0.001549	Sum squared resid.	3.36E-05	S.E. of regression	0.001553	Sum squared resid.	3.38E-05
Durbin–Watson stat.	1.30744			Durbin–Watson stat.	1.274754		

Equation: $\mathrm{d}(\mathrm{sra}_8\mathrm{HPd}) = \mathrm{c}(64) * \mathrm{d}(\mathrm{sra}_8\mathrm{HPd}, 2) + \mathrm{c}(520) * \mathrm{d}92 + \mathrm{c}(521) * \mathrm{d}95$

OLS				SUR			
R-squared	0.806027	Mean dependent var.	0.000312728	R-squared	0.803115	Mean dependent var.	0.000312728
Adjusted R-squared	0.78178	S.D. dependent var.	0.029986054	Adjusted R-squared	0.778504	S.D. dependent var.	0.029986054
S.E. of regression	0.014008	Sum squared resid.	0.00313945	S.E. of regression	0.014112	Sum squared resid.	0.003186578
Durbin–Watson stat.	2.438696			Durbin–Watson stat.	2.477959		

Table 23 (*Continued*)

Equation: $d(sra_9) = c(65) + c(66) * sra_9(-1) + c(522) * d93 + c(523) * d99$

OLS				SUR			
R-squared	0.774555	Mean dependent var.	−0.00223569	R-squared	0.769816	Mean dependent var.	−0.00223569
Adjusted R-squared	0.732284	S.D. dependent var.	0.110603027	Adjusted R-squared	0.726657	S.D. dependent var.	0.110603027
S.E. of regression	0.057227	Sum squared resid.	0.052399624	S.E. of regression	0.057826	Sum squared resid.	0.053501025
Durbin–Watson stat.	1.192039			Durbin–Watson stat.	1.327546		

Equation: $d(sra_{10}l) = c(67) + c(68) * sra_{10}l(-3) + c(524) * d94$

OLS				SUR			
R-squared	0.871203	Mean dependent var.	0.10191042	R-squared	0.867635	Mean dependent var.	0.10191042
Adjusted R-squared	0.85403	S.D. dependent var.	0.172691047	Adjusted R-squared	0.849986	S.D. dependent var.	0.172691047
S.E. of regression	0.065978	Sum squared resid.	0.065297402	S.E. of regression	0.066886	Sum squared resid.	0.067106068
Durbin–Watson stat.	2.849506			Durbin–Watson stat.	2.662251		

Table 24 Generalized method of moments—time series (HAC): Kernel: Bartlett, bandwidth: Variable Newey–West (5), no prewhitening

SYS1scaG
$d(sca_1) = c(1) + c(2) * sca_1(-1)\ @\ sca_1(-1)$
$d(sca_2) = c(3) + c(4) * sca_2(-1) + c(5) * d(sca_2(-1))\ @\ sca_2(-1)\ d(sca_2(-1))$
$d(sca_3) = c(6) + c(7) * sca_3(-3) + c(8)/t\ @\ sca_{10}(-3)\ 1/t$
$d(sca_4) = c(9) + c(10) * sca_4(-2) + c(11) * d(sca_4, 2) + c(12) * t/(t+1)\ @\ sca_6(-2)\ d(sca_4, 2)\ t/(t+1)$
$d(sca_5) = c(13) + c(14) * sca_5(-1) + c(15) * d(sca_5(-1)) + c(16) * t/(t+1)\ @\ sca_6(-1)\ d(sca_6(-1))\ t/(t+1)$
$d(sca_6) = c(17) + c(18) * sca_6(-1) + c(19) * d(sca_6(-1)) + c(20) * t/(t+1)\ @\ sca_4(-1)\ d(sca_5(-1))\ t/(t+1)$
$d(sca_7) = c(21) + c(22) * sca_7(-1) + c(23) * d(sca_7(-1)) + c(24) * d(sca_7(-2)) + c(25) * d(sca_7(-3)) + c(26) * t/(t+1)$ $@\ sca_8(-1)\ d(sca_7(-1))\ d(sca_7(-2))\ d(sca_7(-3))\ t/(t+1)$
$d(sca_8) = c(27) + c(28) * sca_8(-1) + c(29) * d(sca_8, 2)\ @\ sca_7(-1)\ d(sca_8, 2)$
$d(sca_9) = c(30) + c(31) * sca_9(-1) + c(32) * d(sca_9(-2)) + c(33) * t/(t+1)\ @\ sca_9(-1)\ d(sca_9(-2))\ t/(t+1)$
$d(sca_{10}) = c(34) + c(35) * t/(t+1) + c(36) * sca_{10}(-1)\ @\ t/(t+1)\ sca_3(-1)$
SYS1sraG
$d(sra_1) = c(37) + c(38) * sra_1(-1) + c(39) * d(sra_1(-2)) + c(40)/t\ @\ sra_{10}(-1)\ d(sra_1(-2))\ 1/t$
$d(sra_2) = c(41) + c(42) * sra_2(-1) + c(43) * d(sra_2, 2)\ @\ sra_3(-1)\ d(sra_2, 2)$
$d(sra_3) = c(44) + c(45) * sra_3(-2) + c(46) * d(sra_3(-1))\ @\ sra_2(-2)\ d(sra_3(-1))$
$d(sra_4) = c(47) + c(48) * sra_4(-1)\ @\ sra_4(-1)$
$d(sra_5HP) = c(49) + c(50) * sra_5HP(-1) + c(51) * d(sra_5HP(-1))\ @\ sra_8HP(-1)\ d(sra_8HP(-1))$
$d(sra_5HPd) = c(52) * sra_5HPd(-1) + c(53) * d(sra_5HPd(-1))\ @\ sra_5HPd(-1)\ d(sra_5(-1))$
$d(sra_6) = c(54) + c(55) * sra_6(-1) + c(56) * d(sra_6, 2)\ @\ sra_{10}l(-1)\ d(sra_6, 2)$
$d(sra_7) = c(57) + c(58) * sra_7(-2) + c(59) * d(sra_7, 2) + c(60)/t\ @\ sra_7(-2)\ d(sra_7, 2)\ 1/t$
$d(sra_9) = c(65) + c(66) * sra_9(-1)\ @\ sra_9(-1)$
$d(sra_{10}l) = c(67) + c(68) * sra_{10}l(-3)\ @\ sra_{10}(-3)$
SYS1sra8G
$d(sra_8HP) = c(61) + c(62) * sra_8HP(-1) + c(63) * d(sra_8HP, 2)\ @\ sca_1(-1)\ d(sra_1)$
$d(sra_8HPd) = c(64) * d(sra_8HPd, 2)\ @\ d(sra_8)$

Table 24 (*Continued*)

	Estimation			
	Coefficient	Std. error	t-statistic	Prob.
c(1)	0.306601	0.125989	2.43355	0.0161112
c(2)	−0.64008	0.280023	−2.2858	0.0236481
c(3)	0.306749	0.040223	7.626242	2.45E-12
c(4)	−0.4616	0.050503	−9.13994	3.75E-16
c(5)	0.582774	0.115473	5.046853	1.27E-06
c(6)	0.13037	0.028106	4.638562	7.51E-06
c(7)	−0.14457	0.042163	−3.42883	0.0007803
c(8)	−0.2129	0.056051	−3.79838	0.0002101
c(9)	0.940451	0.141303	6.65555	4.82E-10
c(10)	−0.78012	0.122989	−6.34302	2.45E-09
c(11)	0.540342	0.030012	18.00435	1.60E-39
c(12)	−0.46646	0.070064	−6.65759	4.77E-10
c(13)	1.086867	0.046148	23.55169	1.38E-52
c(14)	−1.22309	0.051193	−23.8916	2.48E-53
c(15)	0.492234	0.07655	6.430267	1.56E-09
c(16)	−0.39337	0.0287	−13.7063	2.39E-28
c(17)	1.01984	0.101599	10.03791	1.66E-18
c(18)	−0.8892	0.095385	−9.32216	1.26E-16
c(19)	0.457512	0.122083	3.747537	0.0002531
c(20)	−0.52278	0.058669	−8.91068	1.46E-15
c(21)	1.512662	0.228653	6.61553	5.95E-10
c(22)	−1.74819	0.253013	−6.90948	1.25E-10
c(23)	0.730626	0.163282	4.474613	1.49E-05
c(24)	0.729524	0.077765	9.381098	8.85E-17
c(25)	0.532158	0.139174	3.823693	0.0001914
c(26)	−0.24892	0.065536	−3.7982	0.0002102
c(27)	0.206372	0.052335	3.943296	0.0001223
c(28)	−0.38015	0.0913	−4.16373	5.23E-05
c(29)	0.343602	0.049807	6.898688	1.33E-10
c(30)	0.178478	0.045995	3.880364	0.000155
c(31)	−1.00173	0.120293	−8.32743	4.48E-14
c(32)	0.312532	0.117606	2.65744	0.0087153
c(33)	0.263697	0.032537	8.10445	1.62E-13
c(34)	−0.11243	0.05481	−2.0513	0.041954
c(35)	0.223479	0.040543	5.512165	1.48E-07
c(36)	−0.22669	0.066706	−3.39839	0.0008656
c(37)	0.410337	0.078538	5.224706	5.30E-07
c(38)	−0.79341	0.152393	−5.20636	5.77E-07
c(39)	0.246874	0.109319	2.258289	0.0252624
c(40)	1.014128	0.223294	4.54167	1.08E-05

Table 24 (*Continued*)

	Estimation			
	Coefficient	Std. error	t-statistic	Prob.
c(41)	0.158335	0.081972	1.931566	0.0551585
c(42)	−0.3044	0.14473	−2.10325	0.0369891
c(42)	−0.3044	0.14473	−2.10325	0.0369891
c(43)	0.353333	0.085985	4.109225	6.29E-05
c(44)	0.607509	0.186953	3.249529	0.0014058
c(45)	−0.88958	0.272764	−3.26134	0.001352
c(46)	−0.59086	0.180956	−3.2652	0.0013348
c(47)	0.200071	0.023126	8.651512	4.78E-15
c(48)	−0.51659	0.051403	−10.0498	9.01E-19
c(49)	0.012438	0.001323	9.400312	5.06E-17
c(50)	−0.02672	0.002535	−10.5384	4.19E-20
c(51)	1.079729	0.012712	84.93893	2.99E-136
c(52)	−1.19794	0.103191	−11.6089	4.67E-23
c(53)	0.660945	0.10392	6.360122	1.97E-09
c(54)	0.175152	0.019104	9.168604	2.09E-16
c(55)	−0.31296	0.031561	−9.91593	2.08E-18
c(56)	0.292367	0.030034	9.734402	6.42E-18
c(57)	1.046782	0.020545	50.9516	1.23E-101
c(58)	−0.78373	0.015172	−51.6567	1.51E-102
c(59)	0.534862	0.046339	11.54236	7.15E-23
c(60)	0.779652	0.034143	22.83479	1.64E-52
c(61)	−0.01889	0.003623	−5.21494	9.04E-06
c(62)	0.152942	0.014253	10.73059	1.86E-12
c(63)	5.864809	2.511417	2.335259	2.56E-02
c(64)	0.805251	0.063548	12.67163	1.96E-14
c(65)	0.249173	0.044659	5.579505	9.93E-08
c(66)	−0.61859	0.08038	−7.69586	1.30E-12
c(67)	−0.03635	0.010982	−3.31009	0.0011496
c(68)	−0.13208	0.015079	−8.75877	2.51E-15

Table 25 System residual cross-correlations—OLS: ordered by variables, 5 lags

	d(sca$_1$)	d(sca$_2$)	d(sca$_3$)	d(sca$_4$)	d(sca$_5$)	d(sca$_6$)	d(sca$_7$)	d(sca$_8$)	d(sca$_9$)	d(sca$_{10}$)	d(sra$_1$)
d(sca$_1$)	1	−0.20436	−0.08028	−0.091888	−0.1558	−0.32513	−0.09166	0.127159	0.126493	−0.1381	−0.102451
d(sca$_1$(−1))	0.238371	0.100513	0.069354	−0.188872	0.501609	0.197367	0.144698	−0.16862	0.007396	0.242583	0.369804
d(sca$_1$(−2))	0.464957	−0.00573	−0.20809	−0.126914	−0.1924	−0.47671	−0.413	−0.20746	0.469117	−0.27781	0.159137
d(sca$_1$(−3))	0.014023	−0.16512	0.282422	−0.381427	0.084076	−0.12379	0.256522	0.033792	0.141903	0.265038	0.27344
d(sca$_1$(−4))	0.080867	−0.15566	−0.19726	−0.163086	−0.19362	−0.4359	−0.38842	0.053464	0.283662	0.091934	0.07346
d(sca$_1$(−5))	0.048466	0.223342	0.019214	−0.201697	−0.06186	−0.10777	0.215485	−0.01232	−0.01762	0.143215	0.148988
d(sca$_2$)	−0.20436	1	−0.02033	0.280442	0.078604	0.169666	0.035075	−0.26527	−0.04301	0.00944	0.029148
d(sca$_2$(−1))	0.304251	−0.33059	0.244168	0.176977	−0.10405	−0.14067	0.231152	0.378946	0.388916	0.0737	0.130203
d(sca$_2$(−2))	0.180376	−0.30009	−0.21838	−0.249673	0.428553	0.164485	−0.12539	−0.12696	−0.24927	−0.02269	−0.100335
d(sca$_2$(−3))	0.08852	0.372942	−0.1118	0.285574	−0.12179	−0.05929	−0.41894	−0.28013	−0.01267	−0.12782	−0.207659
d(sca$_2$(−4))	0.008295	−0.18485	0.290198	−0.19912	0.042257	0.051865	0.328405	0.133748	0.051816	0.093589	0.054134
d(sca$_2$(−5))	−0.04955	−0.25392	−0.05879	−0.027027	−0.08283	−0.12925	−0.11605	−0.01391	−0.17007	0.006302	0.109683
d(sca$_3$)	−0.08028	−0.02033	1	0.308264	0.158787	0.323551	0.590183	0.708803	0.13217	0.640846	−0.180649
d(sca$_3$(−1))	0.337497	−0.43834	−0.06704	0.204933	−0.3463	−0.18626	−0.26524	0.377639	−0.27634	0.1118	0.04193
d(sca$_3$(−2))	0.03907	0.297628	−0.04003	0.024955	0.060329	0.089449	0.216249	−0.06979	−0.17868	−0.0111	0.161203
d(sca$_3$(−3))	0.034735	0.034321	−0.10186	−0.267631	−0.04657	0.06572	0.169739	−0.19723	0.436332	−0.44161	0.119385
d(sca$_3$(−4))	0.083949	0.18535	0.223897	−0.162403	0.026417	−0.16438	0.322092	0.048802	0.175681	0.129771	−0.011604
d(sca$_3$(−5))	0.398427	−0.26411	−0.03919	−0.058797	−0.35541	−0.48231	−0.19285	0.174301	0.121024	0.218617	0.015848
d(sca$_4$)	−0.09189	0.280442	0.308264	1	−0.0906	0.211281	−0.15044	0.382849	−0.24187	0.286144	−0.096679
d(sca$_4$(−1))	0.237643	−0.54796	0.065513	0.095888	0.034277	0.243114	0.108567	0.215664	−0.23957	−0.22748	−0.183252
d(sca$_4$(−2))	−0.25775	0.09267	−0.041	0.001857	0.254398	0.459795	0.011027	−0.3158	−0.29426	−0.31956	−0.312641
d(sca$_4$(−3))	0.060369	0.208651	0.431494	0.166593	−0.48511	−0.1802	0.095936	0.136077	0.145572	−0.05945	−0.242455
d(sca$_4$(−4))	−0.01631	−0.45796	0.391378	−0.170627	−0.18053	−0.16552	0.393599	0.541904	−0.05571	0.479824	0.123879

Table 25 (*Continued*)

	d(sca_1)	d(sca_2)	d(sca_3)	d(sca_4)	d(sca_5)	d(sca_6)	d(sca_7)	d(sca_8)	d(sca_9)	d(sca_{10})	d(sra_1)
d(sca_4(−5))	0.308314	0.083025	−0.28778	−0.186627	−0.22081	−0.2977	−0.13306	0.018216	−0.01406	−0.07198	0.0013
d(sca_5)	−0.1558	0.078604	0.158787	−0.0906	1	0.710658	0.354184	−0.06044	0.215431	0.139468	0.058226
d(sca_5(−1))	0.23506	0.13743	−0.27551	0.392722	−0.32507	−0.13605	−0.58393	−0.36561	−0.11694	−0.44898	−0.160362
d(sca_5(−2))	−0.14596	−0.2944	0.416933	0.008684	0.124961	0.006619	0.231986	0.219797	−0.13243	0.37878	−0.011586
d(sca_5(−3))	0.037532	−0.45536	−0.25905	−0.291073	−0.17605	−0.10479	−0.39156	−0.10578	−0.06973	−0.32215	−0.329483
d(sca_5(−4))	−0.32546	0.563786	0.429299	0.129662	−0.04891	0.153143	0.298213	0.085797	−0.17367	0.334916	0.074596
d(sca_5(−5))	−0.09185	−0.3443	0.042503	0.222039	−0.35538	−0.21477	0.002511	0.424443	0.214301	0.138713	0.354686
d(sca_6)	−0.32513	0.169666	0.323551	0.211281	0.710658	1	0.451651	−0.01105	−0.20956	−0.02033	−0.202087
d(sca_6(−1))	0.043414	0.111258	0.020954	0.66825	−0.29507	0.015686	−0.33303	−0.01241	−0.1869	−0.23653	−0.198904
d(sca_6(−2))	0.007598	−0.45947	0.349134	−0.020629	−0.07793	0.050664	0.263848	0.239835	−0.25073	0.087027	−0.190373
d(sca_6(−3))	−0.07874	−0.16756	−0.07382	−0.241908	−0.06333	0.063685	−0.15592	−0.05828	−0.07023	−0.18899	−0.361577
d(sca_6(−4))	−0.01622	0.488009	0.41089	0.107069	−0.32783	−0.08124	0.356004	0.173416	−0.06044	0.211333	−0.006367
d(sca_6(−5))	0.080902	−0.32704	0.128471	−0.005854	−0.22099	−0.22411	0.24531	0.441717	0.176585	0.298198	0.466716
d(sca_7)	−0.09166	0.035075	0.590183	−0.150443	0.354184	0.451651	1	0.287952	0.075051	0.300115	0.04842
d(sca_7(−1))	0.239444	−0.03452	−0.38151	0.084055	−0.28759	−0.2851	−0.37584	−0.12573	−0.03451	−0.16027	0.228464
d(sca_7(−2))	0.157694	0.19669	0.046793	−0.069873	0.088277	−0.17645	0.146565	0.017491	0.159334	0.15294	0.102864
d(sca_7(−3))	0.162717	−0.23252	−0.27738	−0.383346	0.092196	0.021942	−0.0562	−0.2275	0.194938	−0.30508	−0.083403
d(sca_7(−4))	0.11452	0.428296	0.117604	−0.022638	0.109974	−0.08834	0.093916	−0.14617	−0.05	0.144818	−0.015269
d(sca_7(−5))	0.170686	−0.34892	0.056968	0.092562	−0.22715	−0.28749	−0.21879	0.188461	0.169256	0.221837	0.300966
d(sca_8)	0.127159	−0.26527	0.708803	0.382849	−0.06044	−0.01105	0.287952	1	0.174083	0.695733	−0.118307
d(sca_8(−1))	0.359221	−0.16507	−0.18538	0.093641	0.036319	0.233419	0.011879	0.15942	−0.38786	−0.07879	−0.014911
d(sca_8(−2))	0.011789	0.561056	−0.08789	0.253803	0.161084	0.264968	0.157299	−0.27697	−0.00863	−0.21218	0.211926
d(sca_8(−3))	0.227778	−0.18849	0.047901	−0.243131	−0.06513	−0.08946	0.215611	−0.10826	0.423988	−0.39761	0.022347

Table 25 (*Continued*)

	d(sca_1)	d(sca_2)	d(sca_3)	d(sca_4)	d(sca_5)	d(sca_6)	d(sca_7)	d(sca_8)	d(sca_9)	d(sca_{10})	d(sra_1)
d(sca_8(−4))	0.145551	−0.1495	0.164158	−0.303299	0.01913	−0.21426	0.072109	0.009178	0.042069	0.161423	−0.188076
d(sca_8(−5))	0.371743	0.002318	0.031956	−0.10787	−0.3757	−0.49603	−0.24498	0.150834	0.098627	0.290866	−0.101475
d(sca_9)	0.126493	−0.04301	0.13217	−0.241865	0.215431	−0.20956	0.075051	0.174083	1	0.03095	0.19582
d(sca_9(−1))	0.152794	−0.03475	−0.11232	−0.214269	0.001097	−0.0703	0.001794	−0.09724	−0.11135	0.045365	0.001894
d(sca_9(−2))	0.163243	0.1315	−0.17428	0.180316	−0.06756	−0.32416	−0.20934	−0.03024	−0.04258	0.23071	0.032816
d(sca_9(−3))	0.254008	−0.16174	−0.23515	−0.451669	0.143816	0.030617	0.028699	−0.26846	0.058293	−0.26674	0.065711
d(sca_9(−4))	−0.27762	0.245495	−0.02308	0.058829	0.311047	0.139846	−0.06628	−0.25418	0.020193	0.073877	0.240799
d(sca_9(−5))	0.080926	−0.19668	0.075819	0.154405	−0.27322	−0.29693	−0.34279	0.134797	0.248776	0.002247	0.066301
d(sca_{10})	−0.1381	0.00944	0.640846	0.286144	0.139468	−0.02033	0.300115	0.695733	0.03095	1	0.241824
d(sca_{10}(−1))	0.488922	−0.32373	−0.50933	−0.02184	−0.28367	−0.28645	−0.37907	0.059262	−0.09706	−0.25481	0.138613
d(sca_{10}(−2))	−0.30032	0.5107	−0.05599	−0.054073	0.533023	0.514324	0.352901	−0.37042	−0.05847	−0.09713	0.327759
d(sca_{10}(−3))	0.052918	−0.03322	−0.12229	0.087361	−0.15135	−0.13518	−0.22174	−0.15294	0.515574	−0.44955	−0.05172
d(sca_{10}(−4))	0.017396	−0.18244	0.314692	−0.149584	0.08688	−0.02754	0.245004	0.143241	−0.16334	0.267288	−0.252981
d(sca_{10}(−5))	0.164792	−0.21057	−0.17911	0.031792	−0.26818	−0.26656	−0.39649	0.032564	−0.15324	0.094664	−0.243106
d(sra_1)	−0.10245	0.029148	−0.18065	−0.096679	0.058226	−0.20209	0.04842	−0.11831	0.19582	0.241824	1
d(sra_1(−1))	−0.01562	−0.07957	−0.5937	−0.347242	0.026614	−0.37394	−0.37163	−0.32717	0.51043	−0.4135	0.279592
d(sra_1(−2))	−0.22807	0.207868	−0.05635	−0.277841	0.219646	0.161013	0.118702	−0.3078	0.163825	−0.15584	−0.275141
d(sra_1(−3))	0.032613	0.067573	0.019157	0.140028	−0.09389	−0.14785	−0.10516	0.04092	−0.07359	0.193097	−0.267478
d(sra_1(−4))	0.190533	−0.20374	−0.06083	0.022614	−0.01331	−0.09267	−0.027	0.02458	−0.38972	0.18656	0.059843
d(sra_1(−5))	−0.18016	−0.03542	−0.22848	0.006725	0.295864	0.212983	−0.30699	−0.21726	−0.01955	−0.08501	0.252188
d(sra_2)	−0.07831	0.32901	0.416388	0.063816	0.162032	0.129893	0.485695	0.429645	−0.01105	0.559134	−0.115176
d(sra_2(−1))	0.736849	−0.13907	−0.16066	0.178032	−0.24915	−0.29896	−0.06093	0.193442	−0.04055	−0.02107	0.004782
d(sra_2(−2))	0.188637	0.16553	−0.10458	−0.163716	0.548817	0.302653	0.104322	−0.2198	−0.00856	0.092487	0.417636

Table 25 (*Continued*)

	d(sca_1)	d(sca_2)	d(sca_3)	d(sca_4)	d(sca_5)	d(sca_6)	d(sca_7)	d(sca_8)	d(sca_9)	d(sca_{10})	d(sra_1)
d(sra_2(−3))	0.206172	0.076853	−0.32452	0.031531	0.072747	−0.1541	−0.37742	−0.35384	0.386884	−0.4271	0.017178
d(sra_2(−4))	0.119296	−0.13247	0.324196	−0.264832	0.025224	−0.05166	0.192877	−0.0656	0.034185	0.034527	−0.075003
d(sra_2(−5))	−0.0593	−0.31902	0.047672	−0.002626	−0.12295	−0.28542	−0.37138	0.206344	0.070294	0.345249	−0.037706
d(sra_3)	−0.25228	0.075665	0.063403	0.239771	−0.11273	−0.07825	−0.25651	0.337649	−0.19897	0.358662	0.152756
d(sra_3(−1))	−0.00212	0.038102	0.041641	0.061075	−0.24545	0.092911	0.259878	0.15256	0.122733	−0.28139	−0.003856
d(sra_3(−2))	−0.24681	0.200018	0.129231	−0.076733	0.22319	0.372671	0.478427	0.018211	0.068009	−0.05022	0.127689
d(sra_3(−3))	0.267123	0.092183	−0.08774	0.196836	−0.30694	−0.31462	−0.05399	0.041215	0.135565	−0.12267	−0.164458
d(sra_3(−4))	0.328631	−0.11757	0.029419	−0.355134	0.078781	−0.04592	0.254064	−0.00151	−0.02458	0.087049	−0.125362
d(sra_3(−5))	0.274028	0.148488	−0.25478	−0.189916	0.091188	−0.14807	−0.09332	−0.25605	−0.00147	−0.04562	−0.021609
d(sra_4)	−0.15118	0.456694	0.180554	0.403007	−0.41297	−0.1513	−0.18561	0.056756	−0.37189	0.202098	−0.169645
d(sra_4(−1))	0.358795	−0.46871	0.412758	0.068594	−0.29112	−0.3238	0.289124	0.651837	0.129606	0.350978	0.032522
d(sra_4(−2))	0.000777	−0.10651	−0.23706	−0.369005	0.348545	0.343085	−0.00448	−0.10075	−0.09287	−0.08452	0.165805
d(sra_4(−3))	−0.00525	0.740731	−0.03365	0.410241	−0.12344	−0.08055	−0.03193	−0.15598	0.195578	−0.11234	0.095176
d(sra_4(−4))	0.222947	−0.43336	0.171436	−0.231282	−0.09752	−0.09078	0.374575	0.166814	0.225279	−0.04849	0.166346
d(sra_4(−5))	0.095831	−0.08573	−0.25757	−0.271589	0.264268	−0.08594	−0.19759	−0.1584	−0.02162	−0.00048	−0.196851
d(sra_5HP)	−0.15832	−0.041	−0.08973	−0.484778	−0.45387	−0.36986	0.281651	−0.15548	0.019681	−0.15794	0.012781
d(sra_5HP(−1))	−0.01183	0.162322	−0.00436	−0.47444	−0.24246	−0.37893	0.297076	0.050355	0.268908	0.150439	0.072113
d(sra_5HP(−2))	0.23112	0.242049	−0.11534	−0.196278	−0.07548	−0.30124	0.155821	0.116057	0.241715	0.281613	0.298523
d(sra_5HP(−3))	0.319503	0.185394	−0.36963	−0.052495	0.248699	−0.12211	−0.02377	−0.10274	0.170498	0.091223	0.398505
d(sra_5HP(−4))	0.273866	0.119377	−0.4419	−0.090921	0.424209	0.083386	−0.21322	−0.4489	0.181489	−0.30057	0.165622
d(sra_5HP(−5))	0.057535	0.03265	−0.09783	0.00062	0.362275	0.122477	−0.2713	−0.3741	0.121691	−0.17591	−0.102379
d(sra_5HPd)	−0.02582	−0.65912	−0.06508	−0.196108	0.296115	0.237845	0.073186	0.237649	0.087111	−0.16249	−0.122776
d(sra_5HPd(−1))	−0.31994	0.40589	−0.11559	0.132954	0.248179	0.562101	−0.08343	−0.41851	−0.35515	−0.38314	−0.394828

Table 25 (*Continued*)

	d(sca_1)	d(sca_2)	d(sca_3)	d(sca_4)	d(sca_5)	d(sca_6)	d(sca_7)	d(sca_8)	d(sca_9)	d(sca_{10})	d(sra_1)
d(sra_5HPd(−2))	−0.13342	0.202133	0.489677	0.576155	−0.37648	−0.04846	0.095292	0.299402	0.029764	0.203793	−0.090327
d(sra_5HPd(−3))	0.072693	−0.72256	0.058956	−0.219541	−0.03798	−0.03037	0.187078	0.346583	−0.21928	0.070762	−0.128232
d(sra_5HPd(−4))	−0.02532	0.312753	−0.15893	−0.031589	−0.02192	0.118887	−0.11456	−0.25496	−0.25743	−0.18744	−0.202893
d(sra_5HPd(−5))	−0.08591	0.334021	0.3183	0.16489	−0.14448	0.03136	0.232126	0.187184	0.301052	0.155588	0.191555
d(sra_6)	0.079354	0.105344	0.085949	−0.270728	0.454158	0.329718	0.313739	0.043965	0.505304	−0.09948	−0.135169
d(sra_6(−1))	0.057229	0.2963	−0.00753	0.486099	0.230269	0.189335	−0.16484	−0.00869	−0.1936	0.244362	0.054956
d(sra_6(−2))	0.353631	−0.28772	−0.18509	0.330146	−0.03243	−0.17142	−0.34132	0.004231	−0.17732	−0.03542	−0.048348
d(sra_6(−3))	−0.09813	−0.26149	−0.1811	−0.36198	0.454508	0.433039	−0.09523	−0.42312	−0.19465	−0.37987	−0.224681
d(sra_6(−4))	−0.31228	0.303426	0.269713	0.254556	−0.11445	0.075851	−0.17497	−0.15269	−0.02812	−0.06903	−0.192689
d(sra_6(−5))	−0.16875	−0.44392	0.554227	0.190321	−0.42338	−0.21782	0.083623	0.613343	−0.00496	0.444755	0.105625
d(sra_7)	0.285423	0.153645	0.143524	0.634831	−0.09618	0.112987	0.146996	0.272394	−0.4718	0.262607	−0.135284
d(sra_7(−1))	0.320828	−0.20743	−0.16797	0.059214	0.217958	0.17851	−0.07996	−0.06827	−0.14212	−0.12321	0.214895
d(sra_7(−2))	−0.08702	0.085241	−0.17459	−0.072173	0.364089	0.277448	−0.14387	−0.39749	0.099808	−0.40776	−0.076371
d(sra_7(−3))	0.004763	0.013737	0.364363	0.0467	−0.25108	−0.09011	0.0092	−0.01181	0.120599	−0.1006	−0.228426
d(sra_7(−4))	−0.07155	−0.41422	0.372133	−0.032225	−0.19991	−0.22603	0.030383	0.494039	−0.04042	0.511155	−0.065801
d(sra_7(−5))	0.182252	−0.02457	−0.1602	−0.12583	−0.26709	−0.21686	−0.06897	0.118497	−0.20834	0.033663	−0.094111
d(sra_8HP)	0.085464	0.030686	0.262081	−0.010163	−0.29173	0.030023	0.471341	0.251369	−0.10184	−0.00868	−0.154089
d(sra_8HP(−1))	0.274697	0.120757	0.065064	−0.205745	−0.2182	−0.17924	0.373161	0.113165	0.109703	0.020486	0.102649
d(sra_8HP(−2))	0.411478	0.160664	−0.07155	−0.29882	−0.08653	−0.30926	0.253718	0.003069	0.297683	0.05078	0.247511
d(sra_8HP(−3))	0.493465	0.126676	−0.18657	−0.377422	0.063066	−0.32715	0.094591	−0.12208	0.376869	0.028276	0.268989
d(sra_8HP(−4))	0.470091	0.126699	−0.21652	−0.323866	0.157509	−0.31042	−0.05351	−0.21045	0.328319	0.05358	0.248759
d(sra_8HP(−5))	0.401725	0.018312	−0.19042	−0.26463	0.159213	−0.29005	−0.18311	−0.21577	0.269841	0.062981	0.241184
d(sra_8HPd)	−0.06692	0.062992	−0.0988	−0.371353	−0.12033	−0.08903	−0.10758	0.036451	0.194614	−0.01726	0.116522

Table 25 (*Continued*)

	d(sca_1)	d(sca_2)	d(sca_3)	d(sca_4)	d(sca_5)	d(sca_6)	d(sca_7)	d(sca_8)	d(sca_9)	d(sca_{10})	d(sra_1)
d(sra_8HPd(−1))	−0.05089	0.297822	0.170832	0.114387	0.115237	0.036297	0.392667	0.185869	0.139719	0.155716	0.097207
d(sra_8HPd(−2))	0.251565	−0.11526	−0.03377	0.082948	−0.13808	−0.05859	−0.05829	0.075424	0.108538	−0.01701	0.298923
d(sra_8HPd(−3))	−0.04804	0.073139	−0.21511	0.024383	0.415487	0.078338	−0.12938	−0.02349	0.141897	0.097919	−0.020138
d(sra_8HPd(−4))	0.349684	0.044513	−0.25963	−0.137283	−0.17559	−0.03271	−0.00773	−0.44355	−0.17222	−0.56495	−0.38048
d(sra_8HPd(−5))	−0.15138	0.050534	0.33543	−0.104596	0.245597	0.116929	0.201668	−0.03033	−0.00679	0.337691	0.177253
d(sra_9)	0.08446	0.008764	−0.38077	−0.371384	0.382518	0.120217	−0.01789	−0.17715	0.186736	−0.0629	0.293941
d(sra_9(−1))	−0.15351	0.458711	−0.32607	0.37837	0.375252	0.183448	−0.27746	−0.3461	0.014992	−0.06336	0.153266
d(sra_9(−2))	0.107692	−0.23826	−0.08948	0.1436	0.109855	0.079366	−0.23061	−0.16105	0.03125	−0.26202	−0.146382
d(sra_9(−3))	−0.31079	−0.28508	0.003284	0.031958	0.383384	0.347673	−0.22564	−0.1667	−0.33379	−0.01879	−0.36931
d(sra_9(−4))	−0.13573	−0.00072	0.16302	0.301034	−0.30773	0.00209	−0.34016	−0.02619	−0.31772	−0.08653	−0.419996
d(sra_9(−5))	−0.48367	−0.24377	0.462731	0.178846	−0.07878	0.238764	0.213926	0.404048	−0.26742	0.368062	0.098698
d(sra_{10}l)	−0.2292	0.638249	0.231459	0.20436	0.023671	−0.01401	0.334653	−0.13729	0.13404	0.244634	0.22337
d(sra_{10}l(−1))	0.24777	−0.4541	−0.21768	−0.327155	−0.42188	−0.49401	−0.07242	0.057867	0.259296	−0.12013	0.292055
d(sra_{10}l(−2))	−0.09093	0.098661	−0.22868	−0.365858	0.393825	−0.02645	0.090334	−0.18047	−0.04548	0.119218	−0.011345
d(sra_{10}l(−3))	0.203709	0.283232	−0.178	0.02977	−0.22002	−0.13695	−0.29067	−0.24384	0.223085	−0.20417	−0.027343
d(sra_{10}l(−4))	−0.12836	0.032327	0.16951	0.014689	0.393341	0.117687	0.252462	0.169338	0.028096	0.413244	0.251756
d(sra_{10}l(−5))	0.253035	−0.32093	−0.41142	0.075446	−0.14543	−0.18154	−0.4442	−0.23226	−0.14782	−0.3671	−0.049664

Table 25 (*Continued*)

	$d(sra_2)$	$d(sra_3)$	$d(sra_4)$	$d(sra_5HP)$	$d(sra_5HPd)$	$d(sra_6)$	$d(sra_7)$	$d(sra_8HP)$	$d(sra_8HPd)$	$d(sra_9)$	$d(sra_{10}l)$
$d(sca_1)$	−0.07831	−0.25228	−0.15118	−0.158318	−0.02582	0.079354	0.285423	0.085464	−0.06692	0.08446	−0.229203
$d(sca_1(-1))$	0.097945	0.0482	−0.07295	−0.146672	−0.15985	−0.1196	−0.08818	−0.03681	0.067278	0.043284	0.154748
$d(sca_1(-2))$	−0.34973	−0.02838	0.09049	−0.029424	−0.22289	−0.12419	−0.31167	−0.12925	0.162567	−0.15148	0.024616
$d(sca_1(-3))$	0.084228	−0.04724	−0.05481	0.210956	−0.07715	−0.07036	−0.31506	0.017017	0.01644	−0.05721	0.097095
$d(sca_1(-4))$	−0.07144	0.228974	0.05124	0.12321	−0.12584	−0.06605	−0.20605	−0.04243	0.194919	0.008565	−0.056827
$d(sca_1(-5))$	0.124835	0.039175	−0.08646	0.133063	−0.15383	0.076409	−0.00838	0.040436	0.161872	0.215898	0.2403
$d(sca_2)$	0.32901	0.075665	0.456694	−0.040997	−0.65912	0.105344	0.153645	0.030686	0.062992	0.008764	0.638249
$d(sca_2(-1))$	0.10868	−0.53255	−0.18414	−0.122499	0.256324	0.306209	0.199611	−0.05724	−0.08137	0.08935	−0.203069
$d(sca_2(-2))$	0.013987	0.061978	−0.18274	−0.216002	0.229629	−0.01081	0.051019	−0.1867	−0.35028	0.245706	−0.366553
$d(sca_2(-3))$	−0.35637	−0.00214	0.098332	−0.169734	−0.4158	−0.18574	0.050899	−0.12663	0.012026	−0.26852	0.366927
$d(sca_2(-4))$	0.216882	−0.11317	0.091679	0.034743	0.264836	0.005449	−0.26437	−0.04193	0.421731	0.001076	−0.239444
$d(sca_2(-5))$	−0.18353	0.177483	0.127219	0.044708	−0.05792	−0.19559	0.145028	−0.00563	−0.43747	−0.18195	−0.075049
$d(sca_3)$	0.416388	0.063403	0.180554	−0.089731	−0.06508	0.085949	0.143524	0.262081	−0.0988	−0.38077	0.231459
$d(sca_3(-1))$	−0.02418	0.469753	0.196491	−0.019875	0.117831	−0.40434	0.250785	0.317378	0.082579	−0.14398	−0.438173
$d(sca_3(-2))$	−0.11355	0.424394	−0.16791	0.23579	−0.03364	−0.38413	0.03065	0.456515	−0.0578	−0.27306	0.429048
$d(sca_3(-3))$	−0.01613	−0.264	−0.06481	0.401786	0.047155	0.228623	−0.42741	0.400917	0.476245	−0.04767	−0.019793
$d(sca_3(-4))$	0.486833	−0.13583	0.329994	0.358289	−0.37877	0.033506	0.028983	0.286014	−0.35856	−0.18029	0.335851
$d(sca_3(-5))$	−0.00515	−0.20317	−0.1109	0.182116	−0.22434	−0.04082	0.1892	0.113151	−0.07886	−0.03202	0.024452
$d(sca_4)$	0.063816	0.239771	0.403007	−0.484778	−0.19611	−0.27073	0.634831	−0.01016	−0.37135	−0.37138	0.20436
$d(sca_4(-1))$	−0.28171	0.041168	−0.37079	−0.130185	0.718676	−0.21472	0.033156	0.181865	−0.05537	−0.14038	−0.525919
$d(sca_4(-2))$	−0.1138	0.220612	0.178432	0.181758	−0.00579	−0.2889	−0.13854	0.36178	−0.1249	−0.47087	0.070968
$d(sca_4(-3))$	−0.01622	0.004938	0.420171	0.341752	−0.40714	−0.2252	−0.13546	0.432412	0.098847	−0.63244	0.35905
$d(sca_4(-4))$	0.464676	0.22782	0.151514	0.458121	0.167775	−0.23979	−0.01918	0.504918	0.137787	−0.25036	−0.171814

Table 25 (*Continued*)

	d(sra_2)	d(sra_3)	d(sra_4)	d(sra_5HP)	d(sra_5HPd)	d(sra_6)	d(sra_7)	d(sra_8HP)	d(sra_8HPd)	d(sra_9)	d(sra_{10}l)
d(sca_4(−5))	−0.06191	0.37974	−0.06886	0.271561	−0.16462	−0.09666	0.092159	0.371715	0.019235	0.011359	0.115555
d(sca_5)	0.162032	−0.11273	−0.41297	−0.453874	0.296115	0.454158	−0.09618	−0.29173	−0.12033	0.382518	0.023671
d(sca_5(−1))	−0.38677	−0.24102	0.384828	−0.277756	−0.39636	−0.17928	0.194264	−0.23387	−0.22735	−0.18964	−0.028236
d(sca_5(−2))	0.043123	0.040996	−0.0801	0.0087	0.263921	−0.36651	−0.10821	−0.0847	−0.18618	−0.33976	0.016384
d(sca_5(−3))	−0.3589	0.17244	−0.0263	0.095189	0.247906	−0.07271	−0.27503	0.004712	0.252476	−0.08627	−0.496284
d(sca_5(−4))	0.176766	0.385643	0.336651	0.082239	−0.45401	−0.14597	−0.01517	0.152767	0.08226	−0.19872	0.568706
d(sca_5(−5))	0.014761	0.11912	−0.01958	0.132788	0.253974	−0.03964	0.03961	0.20567	0.250637	−0.02899	−0.230897
d(sca_6)	0.129893	−0.07825	−0.1513	−0.369857	0.237845	0.329718	0.112987	0.030023	−0.08903	0.120217	−0.014012
d(sca_6(−1))	−0.16841	0.051495	0.514253	−0.185112	−0.22836	−0.39488	0.30153	0.087423	−0.31523	−0.5148	0.039792
d(sca_6(−2))	−0.10676	0.052973	−0.15756	0.226842	0.377722	−0.41952	−0.05354	0.309544	−0.23811	−0.49254	−0.1261
d(sca_6(−3))	−0.06388	0.310719	0.13436	0.310119	0.064513	−0.16086	−0.30976	0.357552	0.318767	−0.29439	−0.190585
d(sca_6(−4))	0.285213	0.213673	0.444347	0.327732	−0.52563	−0.1494	0.092266	0.454588	0.12593	−0.34457	0.545547
d(sca_6(−5))	0.228302	0.092621	−0.0601	0.265123	0.162037	−0.031	0.076704	0.349219	0.169983	0.019928	−0.136917
d(sca_7)	0.485695	−0.25651	−0.18561	0.281651	0.073186	0.313739	0.146996	0.471341	−0.10758	−0.01789	0.334653
d(sca_7(−1))	−0.02676	0.04869	0.269347	0.071889	−0.2942	−0.13777	0.17377	0.115181	−0.05978	0.044077	−0.11327
d(sca_7(−2))	0.037535	0.004428	−0.25855	0.102196	−0.04824	−0.09311	−0.03223	0.056444	−0.14476	−0.04721	0.375386
d(sca_7(−3))	0.033886	−0.3842	−0.14107	0.121012	0.171691	0.31667	−0.22715	−0.00847	0.381931	0.249328	−0.362341
d(sca_7(−4))	0.224285	−0.04498	0.322795	−0.086105	−0.49427	0.006126	0.166687	−0.16657	−0.32036	−0.01848	0.401431
d(sca_7(−5))	−0.2365	−0.16203	−0.16989	−0.169962	0.02927	−0.00948	0.031775	−0.24617	0.096719	0.07202	−0.172233
d(sca_8)	0.429645	0.337649	0.056756	−0.15548	0.237649	0.043965	0.272394	0.251369	0.036451	−0.17715	−0.137293
d(sca_8(−1))	−0.03382	0.365135	−0.151	−0.098143	0.221054	−0.12781	0.349827	0.384802	0.016063	0.127698	−0.301964
d(sca_8(−2))	−0.0674	0.12283	0.029676	0.092756	−0.23873	−0.22615	0.056232	0.378243	−0.01238	−0.2742	0.530402
d(sca_8(−3))	0.017779	−0.45875	−0.01778	0.359213	0.108108	0.100357	−0.32979	0.307245	0.07598	−0.21614	−0.089528

Table 25 (*Continued*)

	d(sra$_2$)	d(sra$_3$)	d(sra$_4$)	d(sra$_5$HP)	d(sra$_5$HPd)	d(sra$_6$)	d(sra$_7$)	d(sra$_8$HP)	d(sra$_8$HPd)	d(sra$_9$)	d(sra$_{10}$l)
d(sca$_8$(−4))	0.265218	−0.09611	0.202911	0.346314	−0.29281	−0.11125	−0.05343	0.214273	−0.37149	−0.27541	0.125107
d(sca$_8$(−5))	0.044942	0.081743	0.089474	0.152889	−0.37781	−0.1319	0.017042	0.083201	0.282033	−0.08535	0.15169
d(sca$_9$)	−0.01105	−0.19897	−0.37189	0.019681	0.087111	0.505304	−0.4718	−0.10184	0.194614	0.186736	0.13404
d(sca$_9$(−1))	0.318379	−0.22835	0.151821	0.083159	−0.22676	0.144506	0.100764	−0.01539	−0.0851	0.289535	−0.113401
d(sca$_9$(−2))	0.013285	−0.02623	−0.01853	−0.074619	−0.22911	−0.18804	0.336636	−0.16244	−0.24021	−0.05045	0.296039
d(sca$_9$(−3))	−0.18592	−0.30942	−0.36513	−0.139908	0.292599	0.296359	−0.24543	−0.31337	0.391863	0.467798	−0.345843
d(sca$_9$(−4))	0.00726	0.008928	0.21825	−0.240694	−0.24771	0.04476	−0.01173	−0.374	−0.20949	0.058564	0.187814
d(sca$_9$(−5))	−0.41298	−0.04915	−0.13202	−0.24877	0.025019	0.005361	−0.12468	−0.35133	−0.08365	0.01196	−0.100343
d(sca$_{10}$)	0.559134	0.358662	0.202098	−0.157936	−0.16249	−0.09948	0.262607	−0.00868	−0.01726	−0.0629	0.244634
d(sca$_{10}$(−1))	−0.36929	0.250502	−0.28903	−0.161556	0.318366	−0.07809	0.169501	−0.00761	0.197592	0.311848	−0.470723
d(sca$_{10}$(−2))	−0.0028	0.066644	−0.21296	−0.020151	−0.03134	0.05954	−0.12519	0.058352	−0.02085	0.119419	0.417576
d(sca$_{10}$(−3))	−0.16012	−0.41303	0.092482	0.055553	−0.04077	0.2161	−0.23038	−0.0256	0.030666	−0.11245	−0.074739
d(sca$_{10}$(−4))	0.319199	−0.15146	0.08775	0.150782	−0.04271	−0.08564	0.072694	0.053473	−0.43175	−0.14805	0.033512
d(sca$_{10}$(−5))	−0.12908	0.079282	0.03721	0.025779	−0.09907	−0.1883	0.150928	−0.00789	0.12376	−0.11494	−0.116078
d(sra$_1$)	−0.11518	0.152756	−0.16965	0.012781	−0.12278	−0.13517	−0.13528	−0.15409	0.116522	0.293941	0.22337
d(sra$_1$(−1))	−0.33635	−0.03786	−0.40671	0.119535	0.236144	0.151012	−0.4757	−0.23958	0.035667	0.313858	−0.104958
d(sra$_1$(−2))	0.162166	−0.50079	−0.13919	0.15302	−0.12889	0.454542	−0.17178	−0.1218	−0.06471	0.23144	0.173329
d(sra$_1$(−3))	0.342347	−0.32313	0.308599	−0.136183	−0.24022	0.150532	0.311779	−0.28498	−0.06191	0.119177	−0.005468
d(sra$_1$(−4))	−0.10857	−0.09032	−0.13461	−0.33239	0.121002	−0.06416	0.388701	−0.4075	−0.22939	0.237796	−0.182338
d(sra$_1$(−5))	−0.45085	0.196124	−0.27762	−0.47143	0.243733	0.048441	−0.20148	−0.51487	0.172722	0.295845	−0.211465
d(sra$_2$)	1	0.030164	0.438573	0.171358	−0.22642	0.210584	0.255294	0.313154	0.143494	0.041935	0.171932
d(sra$_2$(−1))	−0.04973	−0.22338	−0.13163	−0.16893	−0.09669	0.108995	0.670526	0.080135	−0.33518	0.147036	−0.076845
d(sra$_2$(−2))	−0.0163	0.021786	−0.34026	−0.307464	0.068539	0.053522	−0.11668	−0.19331	0.153725	0.374897	0.029755

Table 25 (*Continued*)

	d(sra$_2$)	d(sra$_3$)	d(sra$_4$)	d(sra$_5$HP)	d(sra$_5$HPd)	d(sra$_6$)	d(sra$_7$)	d(sra$_8$HP)	d(sra$_8$HPd)	d(sra$_9$)	d(sra$_{10}$l)
d(sra$_2$(−3))	−0.26009	−0.20463	0.076031	−0.125592	−0.07453	0.007591	−0.19706	−0.19917	0.01282	−0.11255	−0.012497
d(sra$_2$(−4))	−0.02958	−0.30905	0.013483	0.069898	−0.11415	−0.00011	−0.18876	−0.09883	−0.22982	−0.13804	0.050658
d(sra$_2$(−5))	0.008323	0.260646	0.166973	0.002629	−0.0615	−0.22636	−0.12104	−0.11059	0.138516	−0.16977	−0.157162
d(sra$_3$)	0.030164	1	0.275984	−0.018535	0.049662	−0.5456	−0.12461	0.178616	0.267248	−0.26453	−0.019089
d(sra$_3$(−1))	−0.20129	0.135411	−0.24323	0.305687	0.211418	0.045877	−0.0469	0.550416	0.203491	−0.16523	0.094283
d(sra$_3$(−2))	0.443198	−0.00108	0.114955	0.348859	−0.01479	0.153171	−0.10052	0.509521	0.066668	−0.00023	0.133623
d(sra$_3$(−3))	0.121566	−0.21513	0.150263	0.308979	−0.31341	−0.0765	0.317179	0.383068	−0.42148	−0.29896	0.28412
d(sra$_3$(−4))	0.272485	−0.30306	−0.20954	0.2288	0.043924	0.090901	−0.01018	0.186627	0.123455	0.124888	−0.037447
d(sra$_3$(−5))	0.17381	−0.12419	0.189972	0.023547	−0.26149	0.030916	0.112395	−0.06446	0.088067	0.072421	0.060998
d(sra$_4$)	0.438573	0.275984	1	0.137411	−0.64517	−0.43054	0.232439	0.204685	0.041332	−0.49042	0.223361
d(sra$_4$(−1))	−0.06016	0.065703	−0.31055	0.082684	0.319416	−0.10513	0.223418	0.234059	−0.15133	−0.22399	−0.068496
d(sra$_4$(−2))	0.014433	0.358652	−0.21687	−0.005038	0.233364	0.118637	−0.27813	0.157501	0.427963	0.375911	−0.346767
d(sra$_4$(−3))	0.043959	0.100341	0.338922	0.07883	−0.57456	−0.12261	0.164807	0.22781	−0.13249	−0.30711	0.709723
d(sra$_4$(−4))	0.123498	−0.50559	−0.25074	0.260561	0.301578	0.162884	−0.1061	0.200141	0.049618	0.053274	−0.250274
d(sra$_4$(−5))	0.157162	0.111269	0.045852	0.091493	−0.06905	−0.04615	−0.02105	0.000312	−0.26813	0.012083	−0.056383
d(sra$_5$HP)	0.171358	−0.01854	0.137411	1	−0.18105	−0.25133	−0.30075	0.695554	0.161362	−0.36515	0.277636
d(sra$_5$HP(−1))	0.441603	−0.09751	0.070338	0.655165	−0.31931	0.24544	−0.12118	0.377363	0.212938	0.107045	0.305167
d(sra$_5$HP(−2))	0.440847	−0.17943	−0.04687	0.113068	−0.3103	0.423303	0.217972	−0.00054	0.158546	0.530374	0.186613
d(sra$_5$HP(−3))	0.173581	−0.26406	−0.29359	−0.294863	−0.03495	0.373892	0.291871	−0.3491	−0.04218	0.669506	0.022396
d(sra$_5$HP(−4))	−0.20319	−0.48413	−0.37066	−0.468667	0.077432	0.375479	0.05026	−0.58736	−0.15808	0.536958	−0.100804
d(sra$_5$HP(−5))	−0.19778	−0.44443	−0.05142	−0.470603	−0.0267	0.181726	−0.11222	−0.65328	−0.19957	0.155251	−0.094487
d(sra$_5$HPd)	−0.22642	0.049662	−0.64517	−0.181045	1	0.181071	−0.25047	−0.1202	0.145693	0.249485	−0.701927
d(sra$_5$HPd(−1))	−0.10549	0.096079	0.243692	−0.079322	−0.23949	0.037171	0.056829	0.089742	−0.21803	−0.12713	0.153739

Table 25 (*Continued*)

	$d(sra_2)$	$d(sra_3)$	$d(sra_4)$	$d(sra_5HP)$	$d(sra_5HPd)$	$d(sra_6)$	$d(sra_7)$	$d(sra_8HP)$	$d(sra_8HPd)$	$d(sra_9)$	$d(sra_{10}l)$
$d(sra_5HPd(-2))$	0.075886	−0.06098	0.373429	0.026708	−0.27217	−0.24066	0.164738	0.174466	−0.04356	−0.51701	0.344384
$d(sra_5HPd(-3))$	0.146986	0.133083	−0.12691	0.214448	0.626214	−0.19049	−0.00478	0.259703	−0.00889	−0.08661	−0.594721
$d(sra_5HPd(-4))$	−0.21607	0.292657	0.040432	0.134725	−0.30339	−0.13434	0.076111	0.256021	−0.14939	−0.18034	0.298497
$d(sra_5HPd(-5))$	0.221903	−0.01008	0.168023	0.117134	−0.19347	0.07981	−0.17643	0.218452	0.517639	−0.08425	0.275028
$d(sra_6)$	0.210584	−0.5456	−0.43054	−0.251333	0.181071	1	−0.07326	−0.26356	0.13829	0.684777	−0.125893
$d(sra_6(-1))$	0.317968	−0.18409	0.341643	−0.555902	−0.37646	0.141354	0.555757	−0.39784	−0.37736	0.281925	0.063551
$d(sra_6(-2))$	−0.40509	−0.1486	−0.29447	−0.455943	0.28793	−0.27399	0.33399	−0.40628	−0.36571	−0.03619	−0.197014
$d(sra_6(-3))$	−0.36199	−0.07095	−0.28393	−0.218374	0.468116	0.017907	−0.41718	−0.30712	0.207712	0.09803	−0.44068
$d(sra_6(-4))$	−0.18279	0.133293	0.545692	−0.094738	−0.42674	−0.19168	−0.13315	−0.13339	−0.09808	−0.47829	0.285845
$d(sra_6(-5))$	−0.0372	0.276235	0.113972	0.077645	0.157879	−0.28606	−0.08561	0.099115	0.056066	−0.31996	−0.158429
$d(sra_7)$	0.255294	−0.12461	0.232439	−0.300752	−0.25047	−0.07326	1	0.095636	−0.57891	−0.07941	0.173865
$d(sra_7(-1))$	−0.33747	0.006726	−0.41158	−0.375801	0.388574	−0.11489	0.048397	−0.16825	0.052182	0.182403	−0.296725
$d(sra_7(-2))$	−0.24308	0.02298	0.008075	−0.096601	0.113108	−0.07511	−0.33565	−0.07514	0.004769	−0.17777	−0.043599
$d(sra_7(-3))$	−0.1266	−0.18308	0.292527	0.152561	−0.29492	−0.11097	−0.1785	0.10505	−0.1538	−0.47432	0.175764
$d(sra_7(-4))$	0.263101	0.309164	0.196771	0.215921	0.068528	−0.29983	−0.08573	0.202322	0.116176	−0.29277	−0.160884
$d(sra_7(-5))$	−0.03462	0.427861	−0.01285	0.202805	−0.00632	−0.18967	0.108185	0.291081	0.176292	−0.02419	−0.016906
$d(sra_8HP)$	0.313154	0.178616	0.204685	0.695554	−0.1202	−0.26356	0.095636	1	0.049007	−0.54116	0.255321
$d(sra_8HP(-1))$	0.368818	0.039398	0.13445	0.627102	−0.26137	−0.08786	0.039377	0.771453	0.123421	−0.22523	0.281551
$d(sra_8HP(-2))$	0.337049	−0.142	−0.00762	0.446666	−0.31005	0.087933	0.02342	0.451643	0.082679	0.034097	0.292211
$d(sra_8HP(-3))$	0.260669	−0.30209	−0.11343	0.203276	−0.27641	0.23892	−0.0285	0.094997	0.096456	0.272527	0.169549
$d(sra_8HP(-4))$	0.161844	−0.34784	−0.09767	−0.038237	−0.28522	0.241024	−0.00778	−0.21924	0.025526	0.339496	0.121719
$d(sra_8HP(-5))$	−0.02586	−0.31609	−0.12752	−0.23095	−0.18846	0.194451	−0.05259	−0.45638	0.023276	0.347952	0.000338
$d(sra_8HPd)$	0.143494	0.267248	0.041332	0.161362	0.145693	0.13829	−0.57891	0.049007	1	0.274634	−0.317396

Table 25 (*Continued*)

	d(sra_2)	d(sra_3)	d(sra_4)	d(sra_5HP)	d(sra_5HPd)	d(sra_6)	d(sra_7)	d(sra_8HP)	d(sra_8HPd)	d(sra_9)	d(sra_{10}l)
d(sra_8HPd(−1))	0.37641	0.036996	0.18074	0.077906	−0.17868	0.208367	0.312864	0.182499	−0.29385	−0.00868	0.337861
d(sra_8HPd(−2))	−0.19516	−0.222	−0.27557	−0.125288	−0.06132	0.18867	0.140969	−0.01944	−0.12102	0.271062	−0.066807
d(sra_8HPd(−3))	0.243988	0.165218	−0.10641	−0.104528	0.199267	−0.05199	−0.10737	−0.07835	0.066269	0.115834	−0.022019
d(sra_8HPd(−4))	−0.22492	−0.57039	−0.02159	0.117075	−0.12687	0.098713	0.197799	0.046481	−0.1952	−0.0755	0.01356
d(sra_8HPd(−5))	0.197273	−0.11396	0.17261	−0.083801	−0.18596	−0.0173	−0.12923	−0.2208	0.009627	−0.03997	0.132283
d(sra_9)	0.041935	−0.26453	−0.49042	−0.365153	0.249485	0.684777	−0.07941	−0.54116	0.274634	1	−0.32919
d(sra_9(−1))	−0.03669	−0.22531	0.012726	−0.568572	−0.20597	0.24335	0.320544	−0.62226	−0.36395	0.37097	0.210435
d(sra_9(−2))	−0.38002	−0.51751	−0.30704	−0.500054	0.326698	0.185098	0.02172	−0.61409	−0.22096	0.211334	−0.326312
d(sra_9(−3))	−0.12849	−0.00516	0.042397	−0.358765	0.298681	−0.11774	−0.07635	−0.45709	−0.2137	−0.0705	−0.360018
d(sra_9(−4))	−0.43963	0.184704	0.25925	−0.234842	−0.11813	−0.29442	0.042309	−0.22132	−0.08127	−0.38797	−0.007701
d(sra_9(−5))	0.009702	0.452969	0.123364	−0.026925	0.31319	−0.28479	−0.13981	0.066989	0.287077	−0.22866	−0.179804
d(sra_{10}l)	0.171932	−0.01909	0.223361	0.277636	−0.70193	−0.12589	0.173865	0.255321	−0.3174	−0.32919	1
d(sra_{10}l(−1))	0.005599	−0.32033	−0.1354	0.292328	0.213216	0.080061	−0.23024	0.017578	0.383578	0.246448	−0.409547
d(sra_{10}l(−2))	0.239986	0.084746	−0.14234	0.11154	−0.00767	0.099154	0.023062	−0.10181	−0.32121	0.220353	0.14672
d(sra_{10}l(−3))	−0.26232	−0.39254	−0.09161	−0.17551	−0.36567	0.370237	0.018441	−0.27274	0.240698	0.286826	0.138417
d(sra_{10}l(−4))	0.490922	−0.02283	0.096379	−0.27697	0.171625	0.104078	0.03092	−0.35476	0.090959	0.307841	−0.098449
d(sra_{10}l(−5))	−0.58786	−0.19166	−0.2258	−0.273407	0.109888	−0.01422	0.283923	−0.33411	−0.49421	0.074032	−0.272728

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